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ABSTRACT

The Workshop on Video Technology (1969) sponsored by the Southern Regional Media Center for the Deaf explored uses of video technology in deaf education. An introductory lecture points out the potential effectiveness of video technology for gearing programs to individual needs, specifically the needs of the deaf. The necessity for formulating specific objectives in utilizing video hardware, as opposed to random experimentation is considered, and practical experience in industry is outlined in a presentation which describes the use of videotape in training personnel in a telephone company. Limitations and advantages of using videotape in deaf education, and demonstrations presented by institutions of deaf education concerning application of video technology in equipment, techniques for the classroom teacher, and the use of closed circuit television are discussed. A final paper summarizes the workshop in terms of current progress and suggested areas for research. (JB)

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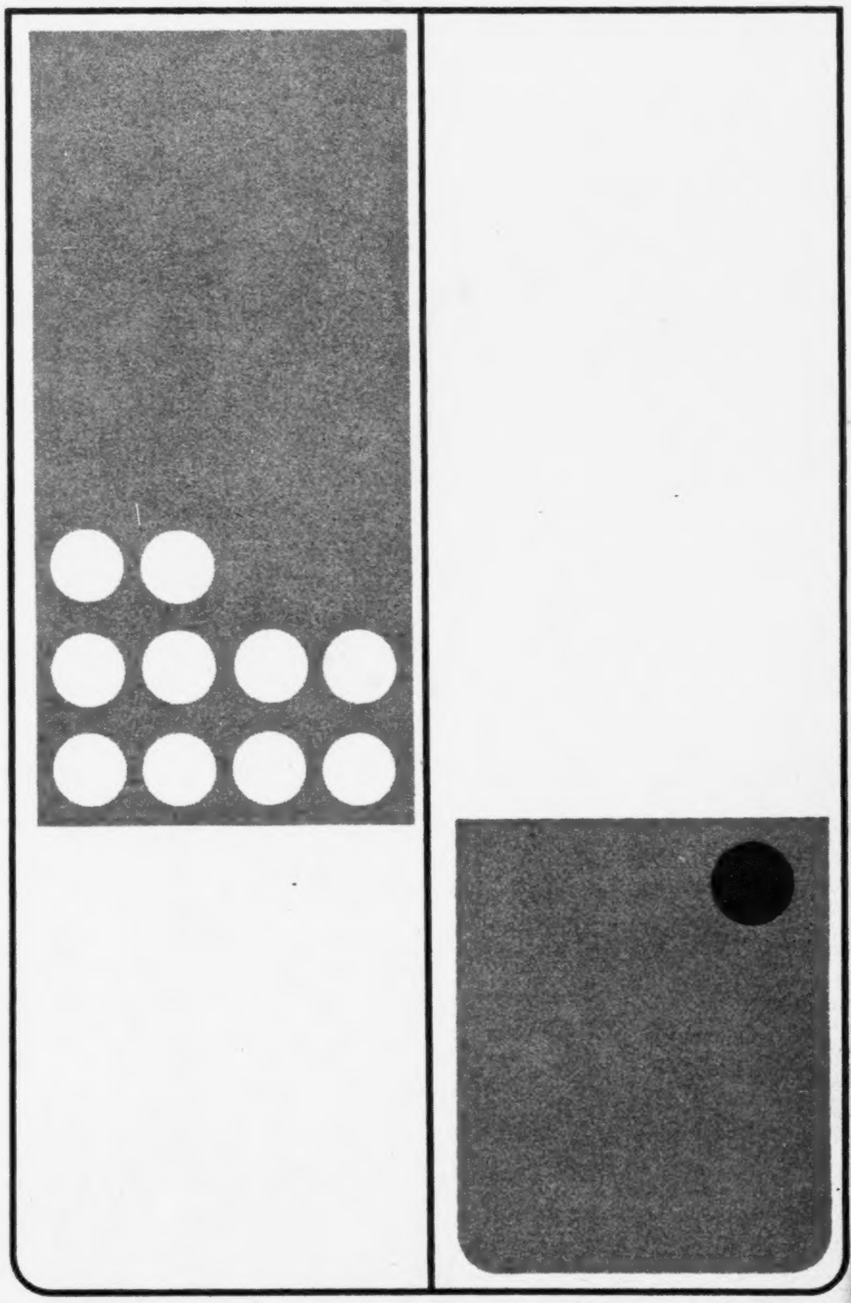
1969 SUMMARY REPORT

VIDEO TECHNOLOGY IN SCHOOLS FOR THE DEAF



SOUTHERN REGIONAL MEDIA CENTER FOR THE DEAF

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WORKSHOP 2

VIDEO TECHNOLOGY & PROGRAMS FOR THE DEAF

"CURRENT DEVELOPMENTS & PLANS FOR THE FUTURE"

FEBRUARY 24-27.1969

Sponsored by the
Southern Regional Media Center for the Deaf
and the Department of Special Education and Rehabilitation
The University of Tennessee

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FOREWORD

Soon after its initiation in September 1966, the Southern Regional Media Center for the Deaf recognized the unique and seemingly unlimited opportunities for the application to deaf education of rapidly expanding breakthroughs in video technology. The major thrust of the experimental phase of our program since that time has been in this direction. Although, as one of four Regional Media Centers strategically located across the nation, we are specifically assigned to a twelve-state region, we are keenly aware of our national commitment as well, and the SRMCD attempts to serve as a clearinghouse for ideas on utilization of television in programs for deaf children and adults. Currently our major concern is to develop new techniques and materials to go with the mediaware. In visiting schools for the deaf, we often see television equipment and sophisticated display systems, but rarely any innovative utilization--or even attempts at innovation. Our concern is shared by deaf educators everywhere. As one of our speakers at this workshop so succinctly put it: "You can bring in a boy off the street and train him to operate a camera or a videotape recorder. What is sorely needed is people who can see beyond the chrome and use these machines to best advantage in helping learners to achieve the goals of education."

And so, in their endless search for new and more flexible instructional tools and techniques which will abolish the isolation of the deaf population and bring them into the mainstream of society, dedicated educators of the deaf from across the nation gathered in Knoxville in February 1969 to exchange ideas and experiences and to learn about new developments and trends in video technology. This project was designed in response to widespread demands for a follow-up to the first workshop on this theme held the preceding year (see "1968 Summary Report: Implications for the Use of Television in Schools for the Deaf"). Features of the program included guest lecturers, demonstrations of practical applications of television in representative schools for the deaf and special projects, and frequent discussion periods. Emphasis was given to these major concerns: potential uses of video technology, unique applications, problems and limitations, and new developments and trends. Basic problem areas were identified and exciting new vistas opened up. Overheard from a participant was this comment: "Being here is like coming up through a manhole and suddenly seeing another world!" It is indeed another world--a world full of promise for finding better ways to educate the deaf child and prepare him for a happy and self-reliant adulthood. Unquestionably, the creative application of video technology can be the least expensive, the most flexible, and the most effective approach to instruction available today.

Our special thanks go to Superintendent Lloyd Graunke and his staff at the Tennessee School for the Deaf, who served as hosts for this workshop and who were tireless in their efforts to assure its success. We are grateful also to our guest lecturers and to the participants, all of whom were eager to share their trials and tribulations as well as their triumphs and successes. And a special word of appreciation goes to our leaders at the national level, under whose guidance and support all things are possible.

William D. Jackson

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GENERAL SESSION I

Presiding: William D. Jackson, Director
Southern Regional Media Center for the Deaf
The University of Tennessee, Knoxville

GREETINGS

In Washington, as you know, there has been a change in administration and one of the major thrusts in the Department of Health, Education, and Welfare will be in education for the handicapped. I think the theme of this conference will be an integral part of that thrust. I am delighted to be here and to welcome you to this workshop.

--Dr. Frank B. Withrow
Director, Division of Educational Services
Bureau of Education for the Handicapped
Office of Education
United States Department of Health, Education, and Welfare

It is my great pleasure to welcome you to The University of Tennessee. This University, which is not only a state university but a land-grant institution, has three major functions: teaching, basic research, and public service. It is a multicampus institution under the leadership of a President of the statewide system and a Chancellor on each of several campuses -- at Knoxville, Martin, Memphis, and soon in Chattanooga. The Knoxville campus is the oldest and largest of the University. It offers diverse academic programs through fifteen colleges and schools and is involved in extension programs throughout the State. We watch, with great interest, innovations in teaching techniques and we are very happy to have you here for this conference on new strategies in utilizing television for instruction. I hope you have a very productive meeting.

-- Dr. Walter Herndon
Associate Vice Chancellor for Academic Affairs
The University of Tennessee, Knoxville

INSTRUCTIONAL MEDIA AND THE INDIVIDUAL STUDENT:
A LOOK TO THE '70'S

Today we are living in a period of dynamic change, and many changes are taking place in the instructional programs of our schools: buildings are changing, our roles as teachers are changing, and our students are changing. Merely to keep up with changes in instruction and curriculum is a problem for the teacher. Instructional tools available to the teacher are changing and for independent study there is a whole variety at our fingertips: the textbook, the listening station, filmstrips, films, programmed texts, multimedia programs, and the computer. For example, in a special project now underway we have programmed the biology laboratory for independent study. The student enters one of 28 instructional modules and takes as long as he wants. The results have been tremendous and students who never before liked biology enjoy the laboratory. In another independent study project we have developed a series of art sequences for grades 4-12 and now are working on a similar project in higher education. We have teaching machines such as the auto-tutor. We have computer-assisted

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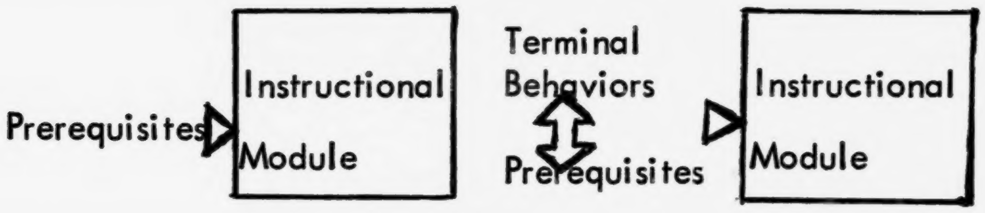
An address with demonstrations by Dr. Robert M. Diamond, Director, Instructional Resources Center, New York State University College, Fredonia.

and computer-directed instruction. Another type of learning that is critical--and I think this is where we as teachers should spend more time--is in student-teacher and student-student interaction. It may be directing the students in a small group or in a laboratory with two students working together on a project. We can prepare visual materials to promote discussion. We can use an overhead projector. We can use television, and in one of our most exciting projects television is used in the laboratory where the instructor in the front of the room lectures and demonstrates, the students at their desks working along with the instructor are able to see close-ups. We have found that laboratory time can be reduced as much as 40 percent and that the low-ability student can often learn far better this way. And it's simply magnification by means of television.

The primary problem we face is how to develop an instructional program that will meet the needs of the individual child--and nowhere is this need more apparent than with the deaf or hard-of-hearing student. In most instructional patterns using large-group instruction, meetings are scheduled with little or no flexibility in time or length from one week to the next. Seminars, independent study, meetings with faculty, and laboratories are then scheduled between the large-group sessions. It is in these "in between" sequences that we find most of the innovation and individualization now taking place. The traditional pattern of instruction with students receiving large amounts of their schooling in groups is instructionally invalid. It is based on the assumption that students enter each class at the same place in the learning spectrum and this assumption is not true. Programmed instruction, with its demand for behavioral objectives and a stated list of prerequisites, has recently focused attention on this area. One of the things which frustrates teachers the first time they program is that they have made inaccurate assumptions about the students. They have assumed vocabulary that not all students know and fundamental skills that not all students have mastered.

Basically, then, as we look at an instructional program we find that if we superimpose the way people actually learn on any type of schedulized instructional program, we are going to clash. Think, for example, of an "eighth-grade reader." What does it mean? It means that 50 percent of the students read above that level and 50 percent read below that level. What we have to do with instruction is to evolve a theory of steps, so the student does not go to the next step until he has learned and completed the present step. Then we come up with a pattern that may look something like this:

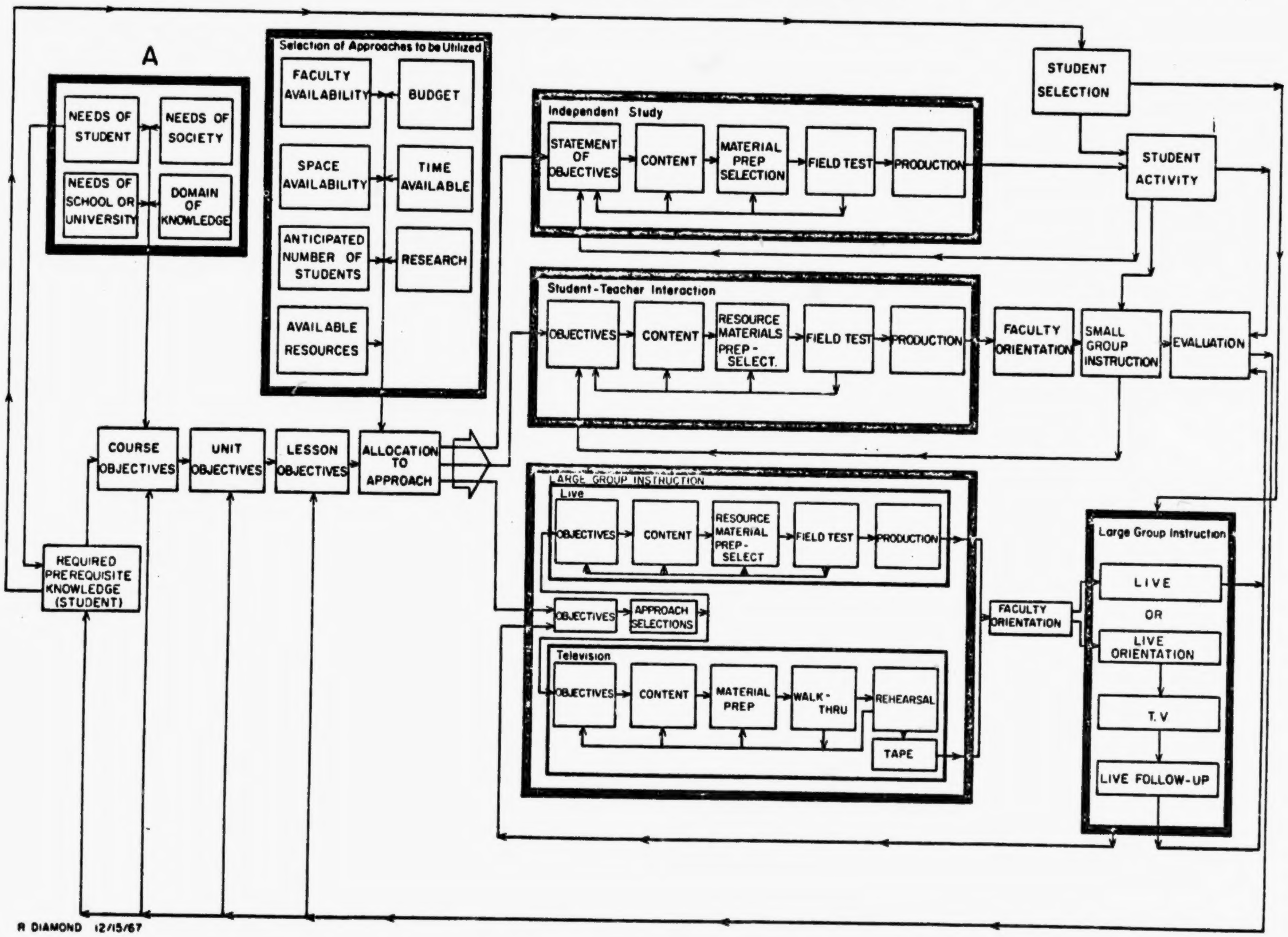


Ideally, we can anticipate, within every discipline, a continuum of instruction consisting of a series of self-contained instructional modules. Starting with a series of tested prerequisites, each module will contain--as required and in a variety of orders and configurations--seminars, programmed and computerized sequences, laboratories, independent study, and faculty interaction. The terminal behaviors of each module become, in effect, the required prerequisites for the next module.

Today we teach in a classroom limited by a variety of artificial barriers: grade levels, passing and failing criteria, inflexible scheduling patterns, and at times the separate disciplines themselves. Only when the objectives and contents of large group instruction can be placed in perspective within an instructional continuum designed to meet the needs of the individual can we hope to have truly efficient and effective instruction. The technology of the 70's should give us the capability of making this possible and assuring the most effective use of all resources. Then we can have maximum efficiency of teacher time, maximum efficiency of student time, and--above all--maximum learning for the individual student.

With the wide variety of tools and techniques available, how does the teacher or administrator select the pattern of instruction that will prove most effective in his or her particular situation? How does one develop a rationale for decision? One technique is to use the "Systems Approach to Course Development" (see Figure). A systems approach is nothing more than a process or sequence based upon (l) the needs of the student, (2) the needs of society, (3) the domain of knowledge, and (4) the goals of the institution. It is only when we look at these things that we can define our objectives in behavioral terms.

A SYSTEMS APPROACH TO COURSE DEVELOPMENT


A
NEEDS OF STUDENT
NEEDS OF SOCIETY
NEEDS OF SCHOOL OR UNIVERSITY
DOMAIN OF KNOWLEDGE
Selection of Approaches to be Utilized
FACULTY AVAILABILITY
BUDGET
SPACE AVAILABILITY
TIME AVAILABLE
ANTICIPATED NUMBER OF STUDENTS
RESEARCH
AVAILABLE RESOURCES
COURSE OBJECTIVES
UNIT OBJECTIVES
LESSON OBJECTIVES
ALLOCATION TO APPROACH
REQUIRED PREREQUISITE KNOWLEDGE (STUDENT)
Independent Study
STATEMENT OF OBJECTIVES
CONTENT
MATERIAL PREP SELECTION
FIELD TEST
PRODUCTION
Student-Teacher Interaction
OBJECTIVES
CONTENT
RESOURCE MATERIALS PREP-SELECT.
FIELD TEST
PRODUCTION
LARGE GROUP INSTRUCTION
Live
OBJECTIVES
CONTENT
RESOURCE MATERIAL PREP-SELECT
FIELD TEST
PRODUCTION
OBJECTIVES
APPROACH SELECTIONS
Television
OBJECTIVES
CONTENT
MATERIAL PREP
WALK-THRU
REHEARSAL
TAPE
STUDENT SELECTION
STUDENT ACTIVITY
FACULTY ORIENTATION
SMALL GROUP INSTRUCTION
EVALUATION
FACULTY ORIENTATION
Large Group Instruction
LIVE
OR
LIVE ORIENTATION
T.V
LIVE FOLLOW-UP

R DIAMOND 12/15/67

Once we get the objectives, comes the question of what to do in a particular school. One thing that is going to make a difference is the faculty. How about the number of students? In a class of five students you will do things you wouldn't do if you had ten or fifteen in a class. How about space? Do you have space and facilities for independent study? Can you get the students together, if desired, all at one time? Do you have a room where you can show films, use overheads, and so on? What about time? We have found that to do a short program sequence of 15 to 20 minutes may take twenty hours of the instructor's time for preparation and field-testing. A good television presentation may take 100 hours in preparation. The teacher, then, must be given adequate time for selecting and preparing materials. How about resources? Do you have a library of instructional materials? For example, there's a huge amount available now in 35mm slides which cost less money than going out and taking your own. Are independent learning materials available? Is there help for designing your own if you want to? What does research show? It is critical as we evolve new techniques to look at current research. What about the budget--how much money do you have to spend? Only when we look at all these different factors can we effect the one-way transmission of large-group discussion into independent study, brought to the student when he is ready for it.

For a long time the public has taken the educators' word that we are accomplishing something. Pretty soon we are going to have to show that we are actually getting results. For the first time educators have at their disposal a series of tools and techniques that can dynamically assist them in improving the effectiveness and efficiency of instruction. Traditional patterns are often ineffective and wasteful in time, money, and resources. Whether or not use is made of the alternatives available to us is the responsibility of the teacher, the administrator, and the public who must support change and the exploration of new approaches. We cannot succeed under the present patterns and artificial limitations based on traditions whose logic has long since been forgotten. It is my hope that in the next few years we can start designing the instructional materials that will allow us as teachers to spend more time with the individual, so that each student can go as far as he is capable of going.

Discussion

Q: How do we get these new ideas for instruction across to teachers or teacher trainees?

A: Edgar Gale had an article one time called "Good Reasons for Doing Nothing" and up in the corner it said, "There are some people who resist change, there are some people who change, and there are some people who never realize that change takes place." I think we have to realize from the start that we're not going to get to all our students, or teachers in this case. What we normally do is first pick our problem area, then get into this department and start working. For example, for the past few summers I have literally started hitting heads with faculty people on this whole area of behavioral objectives, having them read major books on preparing instructional objectives. Then the fun begins. We have had more success than in a school of education. Why is this true? When you go into a science, art, or music department and say, "Let's try this," they say, "O.K., because you're an expert." But go to an education department and they are the experts on what you're talking about. You are stepping on toes by just saying to a person who has taught methods all his life, "Here's a new method; why don't you try it?" And this is one of the reasons why we meet more resistance in schools of education. You pose more threat there than in other departments.

GENERAL SESSION II

Presiding: Fred A. Miller, Production Coordinator
Southern Regional Media Center for the Deaf
The University of Tennessee, Knoxville

STRATEGIES FOR INNOVATION: DEVELOPMENT OF APPROPRIATE OBJECTIVES

Educators are caught up in a growing spiral of educational technology in which there is an excess of hardware but a severe shortage of both the software and the wherewithal to produce it. Except for the old standbys--motion pictures, filmstrips, and audiotapes--the teacher is hard pressed to find materials which will help students to achieve their goals. And if the teacher has a specialized audience such as the deaf child, even the old standbys may leave something to be desired.

With the development of hardware which enables the teacher to produce his own materials--8mm motion picture cameras, the ubiquitous 2 x 2 slide camera, and now low-priced videotape and closed-circuit television equipment--innovative teachers everywhere are filling the gaps in commercially available materials with their own productions. There is both a light and a dark side to this type of activity. On the light side are products which meet specific needs of specific audiences. On the dark side are products which do better that which should never have been done at all.

Our concern, then, must be to approach the selection of existing materials and the development of new materials in such a manner that we can meet the specific needs of specific audiences, but, at the same time, to be assured that

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An address by Dr. Merlyn Herrick, Assistant to the Dean, School of Medicine, The University of Missouri, Columbia.

what we are doing better is, indeed, something that should be done.

Let me give you an example. During the past semester, I worked with our Pathology Department in producing a series of tape-slide presentations on laboratory techniques. Heretofore, residents had demonstrated the techniques for such procedures as making a white blood cell count before the students went to the lab. In these demonstrations were all the problems inherent in large-group demonstrations. Students in the back row couldn't see; the viewpoint of the observers was 180 degrees from that of the demonstrator. With the tape-slide presentation, each student viewed an excellent presentation featuring a professional technologist performing each step with the clairty obtainable from the subjective viewpoint and judicious use of closeups. In other words, we made use of all the advantages in self-instruction and programmed instruction, and we produced an unquestionably superior instructional presentation. This statement is corroborated by the findings of the laboratory instructors who reported that the students performed at a higher level in the lab compared to previous groups. But a potentially embarrassing question can be asked: should the students be doing these lab procedures? In all probability, not one physician in 100 will do his own lab work. However, we must accept the content decisions of the content experts, and the faculty's decision was that the students should have the experience of doing these procedures. The instant that the decision is made--*if* it is made--to not require such procedures, we will be guilty of having done something better which should not be done in the first place.

As you can see, the instructional expert, the message designer, has a problem. He can usually turn to innovative ways of saying things which will be more effective. Content people often do not come to grips with the basic question of "should it be done?" The problem is to sit down with content experts and determine whether the message should be transmitted at all before trying to do it better. This point immediately raises the question of appropriate objectives.

Speaking about the need for objectives, a friend of mine says, "Any old road will get you there, if you don't know where you are going." Actually, we need well-defined objectives for three reasons: (l) to know where we are going; (2) to help determine how to get there; and (3) to be able to determine when we have arrived.

We should not attempt to define objectives before giving some thought to what we know about the learning process and the learner. Hilgard, in his Theories of Learning, developed a number of principles related to learner motivation. Some of those principles are paraphrased here:

1. A motivated learner acquires what he learns more readily than the non-motivated learner.
2. Learning motivated by success is preferable to learning motivated by failure.
3. Active participation by learners is preferable to passive participation.

4. Meaningful materials and meaningful tasks are more easily learned than meaningless ones--or ones not understood.
5. Knowledge of performance, or mistakes, and of successful results aids learning.

From our experience with self-instructional programs we can say:

1. Learners should practice that which is intended to be learned.
2. If the learner is expected to transfer his training to other areas or other activities he should be given practice in making such transfers.
3. Different types of content require different instructional approaches.

We should also be cognizant of three types of behavior involved in learning. Much of what we want learned requires psychomotor behavior--the learner engages in physical activities. Much of what we want learned is cognitive--it involves mental processes such as analysis, synthesis, and computation. We would like to think that we can also involve the affective domain. That is, we would have the learner develop desirable attitudes and feelings.

In specifying objectives for instruction, for many years we have been concerned only with the affective domain. When asked for our general objectives we almost always respond with such statements as:

We want the learner to develop an appreciation of good music.

We want to inculcate an awareness of the contributions of the Mediterranean countries to our cultural heritage.

We want to develop an understanding of the role of science in human progress.

Note that each of these objectives is stated in affective terms--terms which, although as uncontroversial as motherhood and apple pie, are totally untestable.

We are learning that such objectives do nothing for us other than to impress others with our lofty intent. Because the achievement of such objectives is untestable, we do not really know where we are going, we haven't the slightest notion of how to get there, and we will never be able to determine that we have arrived. What we need are objectives that we can work with--objectives which are operational rather than inspirational.

One method of getting at more appropriate objectives is to state them in terms of cognitive or psychomotor behavior. In other words, the learner can do. He can shoot a basket, he can sink a putt, or he can make a computation. Affective statements of objectives tend to be meaningless because of their inherent ambiguity. Cognitive and psychomotor statements indicating what behavior is expected are meaningful and unambiguous.

Suppose, for example, that I am an arithmetic teacher, and I am planning a lesson in long division. My objective is: I want the learner to understand long division. Now what shall I do? Do you understand long division? Do I understand long division? How or what would I test to make such a determination? Let us take a look at what I would probably do as that arithmetic teacher. I will show the student how to do long division. I will give him lots of problems for practice, I will check his work periodically, and I will help him when he makes mistakes. Then on the day of reckoning, I will give him twenty problems to work during the class period. Then, at my convenience I will compare his answers with mine and if his agree with my answers on at least fourteen problems, I will give him a passing grade. Now my question is this: Where in this time-honored ritual did I pay any attention to my stated objective? Note that I said, "I want the learner to understand long division." But I tested him not in the affective domain of understanding but in the cognitive domain of mental processes along with some psychomotor behaviors. I tested him for action and upon his ability to derive from that recipe or formula the same magic number that I derived.

We have B.F. Skinner and his reintroduction of programmed instruction to thank for the current emphasis on the statement of objectives in operational terms--in terms of the behavior we hope to elicit. Programmed instruction a la Skinner requires that the programmer analyze his content into small, basic units which the learner can successfully accomplish, one by one. To enable the learner to demonstrate to himself that he has indeed accomplished, he is required to do something. The statement of what the learner is to do is an operational or behavioral objective. We have an operational statement: the identification of the specific behavior the learner is to exhibit.

For some reason, stating objectives in behavioral terms seems to stop many teachers dead in their tracks. However, there is a very simple test with which you can identify a behavioral objective. Because it specifies a demonstrable behavior, it must be stated as "the learner can do something." To become specific, we need only to substitute other active verbs for do; for example, the learner can list, draw, compare, calculate, solve, analyze, memorize, construct, and so on. Given a little time, I have seen teachers develop a list of more than fifty verbs to substitute for do. Some were nearly synonomous, but often with slightly different connotations. Let's go back to that arithmetic teacher and get him out of the fire. The general objective, stated in all the ambiguity so typical of such objectives, was the learner will understand long division. Understand, appreciate, know, and so on are ambiguous because each means thirty different things to thirty different people. So, let's restate our goal in specific, behavioral terms. Just what do we want the learner to do? We want him to make a trial division and select a quotient, multiply that by the divisor, subtract, divide again, and so on, until he has a complete quotient with or without a remainder. Stated less atomistically, we want the learner to work the problem in the prescribed manner and obtain the correct answer. And now we have a testable objective because that student either can or cannot work the problem.

A more functional objective can be produced consisting of three different parts as suggested by Robert Mager in his paperback, Preparing Objectives for Instruction. First, what is the learner expected to do? Second, what are the conditions attached to doing it? And third, to what level of accomplishment? In my arithmetic example, the learner shall work twenty problems in long division in forty minutes getting at least fourteen of them correct.

In designing instructional presentations it is really very important for the teacher to be able to specify behavioral objectives because such statements give a clear picture of what the message must contain. Returning again to my belabored long division example, if Johnny is to be brought up to a level of capability so that he can solve correctly a minimum of fourteen problems in forty minutes, my work is cut out for me. I must do whatever is necessary to enable him to accomplish all the steps in long division at a rapid enough rate so that he can achieve the stated level of success. There just aren't any if's, and's, or but's--my job and Johnny's are very well defined.

When discussing the use of behavioral objectives with a heterogeneous group, someone is almost certain to say, "That is all well and good in arithmetic, in science, and in grammar. But in art, history, and philosophy you can't just make operational statements. We want the learner to appreciate good music or to understand philosophy." My immediate reaction to such statements is this: Well, maybe you can't, but don't assume from this that I can't or that others can't. Consider the appreciation of good music. First we must define what we mean by good music. Having laid down the ground rules, I will suggest that these specific behavioral objectives be employed:

1. Given an assortment of recordings, the learner chooses good music to listen to.

2. Given alternative program sources in a listening booth, the learner chooses good music.

I'm sure each of you could cite other statements of behavior which would produce a set of behaviors which would lead to the generalization that the learner seems to appreciate good music.

If you hear someone stating his objectives in the ambiguous terms of generality, you have only to look at the examinations such teachers give to determine what the real objectives are. You will surely find that his objectives include:

The learner shall identify statements as true or false.

The learner shall make a list of five causes of the Civil War.

The learner shall identify the correct answers in twenty multiple-choice questions.

The learner shall fill in the blanks.

He shall draw, criticize, calculate, etc.

He shall write an essay on ______________, and to get full credit he must include A, B, C, D, etc.

In other words, we have a great tendency to state our objectives in flowery terms, but when the chips are down, we test in a most operational fashion.

Spelling out behavioral objectives in some detail is a worthwhile bit of recreation for any teacher. However, we usually get forced into specifying objectives as a result of our desire to transmit an instructional message. Specifying objectives is but one step--and not even the first. The first step in designing an instructional message is entirely obvious: What is it we want to say? What is the topic? Here is the point at which we should apply that embarrassing question: Is what we want to do better worth doing at all? We should also ask what medium or combination of media will be most effective. A glance at the program for the remainder of this workshop quickly reveals that for our purposes here the answer is closed circuit television and videotape.

Within this first step, the message designer should develop an outline of the content from which he will draw for his message. He may not use all this content, but the outline will keep before him a reminder of what went before and what comes after his message. He may also want to consider the treatment he will use for this topic. Will it be dramatic? Or perhaps strictly expository?

With the topic identified and a treatment accepted, the teacher should next consider his audience. To whom are you talking? What are the peculiarities of this specific audience which will or should determine the development and presentation of the topic? The participants in this workshop are immediately aware of a major characteristic, the inability of their audiences to hear. Important as it is, that is but one audience characteristic. We should also consider age, sex, vocabulary, and the influences in the audience's background. The current upheavals on some of our college and high school campuses suggest that we have not been eminently successful in getting our messages across. Perhaps if we look more closely and find that we have almost always aimed at white, middle-class America, we should not be too surprised at our failures. How many of our instructional messages suggest by word or picture the shiny new car, a suburban bungalow, a businessman father, and other similar attributes of white middle-class America?

Having identified the topic and carefully analyzed and defined the audience, it is time to specify the objectives for our message. A statement of general objectives is certainly in order, but we must be sure to go beyond that to the behavioral statements of specific objectives. As we said earlier, operational objectives spell out for us exactly what must be done to enable learners to achieve these objectives.

The fourth step in producing instructional messages helps to insure that we do our job that well. After identifying the objectives, we should order them. This could be a chronological order, a logical order, a simple-to-complex order as in math, or it could be an arbitrary order. If we are to present a number of concepts, none of which must precede or follow another, we must start somewhere, so we make an arbitrary order. The basic question is: What is the best order of accomplishment of individual objectives to enable maximum learning?

It is worth noting at this point the implications for curriculum design that exist in the ability to handle behavioral objectives fluently. Just as ordering objectives will lay out the skeleton of an instructional message, so will a more complete set of ordered objectives lay out the skeleton of a curriculum. I am continually amazed when involved with curriculum revision that the delineation of content for a curriculum is almost alwasy based upon "that's the way it has always been," "that's the way it was when I was in school," or else upon the apparently magic wisdom that must arise like a Phoenix when a committee gets together. Rarely has a curriculum been based on what we really want the learner to be able to do when he exits from it.

Now we come to the fifth step in producing instructional messages--the preparation of the material. This may include writing, photography, graphics, videotaping,and so on. This is the biggest job of all in terms of actual manhours, but with the audience defined and with objectives stated behaviorally and listed in order, this production step is relatively easy--one which can often be turned over to the production technicians.

The sixth step involves testing and evaluation. Does the message work? Can learners do whatever it is we want them to do? What has not worked successfully and how do we need to modify it? Note here that again we are borrowing from programmed instruction. Skinnerian programming made a fetish of low error rates and emphasized the concept that if the learner fails it is the message designer's fault. If the learner is a valid member of our defined audience, and if we have not communicated well enough to enable him to achieve the stated behaviors, it most assuredly is our fault. We as the message designers need to do something.

That something is the seventh step, revision. We have learned by actual trial that the communication contains flaws, now our responsibility is to reduce these flaws thus decreasing learner errors. I recommend to you a most thoughtful document by Benjamin Bloom called Learning for Mastery. This essay appeared in the May 1968 Evaluation Comment published at UCLA and will appear as a chapter in Formative and Summative Evaluation of Student Learning by Bloom and others. In this essay Bloom suggests that 90 percent of the students in a defined audience should be able to master what we have to teach them. The proviso in this statement is if we give them the time. He bases this tenent upon a new definition of aptitude suggested by John Carroll: that aptitude should be defined not as the level to which the learner can climb in unit time, but rather the time required for the learner to reach unit level of accomplishment. Again, the essence of these ideas comes from programmed instruction where we expect all members of the audience to reach criterion but each in his own time. I submit that this level of expectation is entirely valid, because if we apply the several steps I have outlined, any instructional message becomes essentially a program.

I have attempted to outline for you two major ideas under my topic, "Strategies for Innovation: Development of Appropriate Objectives." First, I have emphasized the need to develop objectives at the operational level after having made certain that we do not waste our energies using media and materials to do better that which we should not be doing at all. Second, I have suggested a series of seven steps for the production of effective instructional messages based upon the development of appropriate objectives. If I interpret the remainder of the workshop correctly, we will have an opportunity to relate these concepts to television hardware and to instructional messages more di[illegible]ed at programs for the deaf. But I would leave you with a word of caution and challenge. It is so easy to become enamored of the wonderful machines we have at our disposal, with their blinking red lights, their spinning reels, and their rows of buttons waiting to be pushed. It is easy to succumb to their lure and to become super-technicians and gadgeteers. Remember, you can bring in a boy off the streets and train him to operate a camera or a VTR. What is really needed is people who can see beyond the chrome and use these machines to best advantage in helping learners to achieve the goals of education.

Discussion

Q: Assuming that we have delineated objectives, how do we identify the most appropriate media?

A: Through the auspices of Uncle Sam we have tried to ride the catch-words, and one of the first was "television." It got followed very quickly by "programmed instruction" and now "computer" is the magic word. I think we must not ride one horse to the exclusion of the others. Be perfectly willing to accept the use of television, of programmed instruction, the overhead projector, motion pictures, filmstrips, and so on according to the best contribution that is unique to each of these individual areas.

Q: Most of the programs to date have been in the "how-to-do" category, in math or social studies, for example. Why is it we have so much difficulty in getting programs in cognitive or psychomotor areas somewhat more appropriate for our purposes than language or social studies?

A: We must get the people who are in the area to think about some of these things. Their attitude tends to be, "You can't do that," and this attitude is largely based upon the fact that what they know about programmed instruction comes from the stuff written between 1960 and 1964.

Q: What is the teacher going to do and what is somebody going to do for the teacher? What programming can we expect the instructor to do and what choosing of programs done by others?

A: I think we can help teachers to become aware of some of the criteria that might be used for the selection for materials on the basis of what a given medium can contribute. Does this particular material meet our objectives and, if it doesn't meet our objectives, then do we want to use it? Most colleges and universities offer courses on the selection and utilization of audio-visual materials. I guess we have to hope that they are to some extent at least doing a good job. I have a feeling that I have talked around the subject instead of talking to the answer that you wanted.

Q: Maybe we need a course in the selection of appropriate objectives just as we now have courses in the selection of appropriate materials?

A: I think you are right. In my course on programmed instruction, for example, I used to find it exceedingly difficult to get students to write objectives in behaviorial terms. Each succeeding year I find this problem diminishing.

Q: Earlier in your talk you mentioned "a book that cut across many fields." What is the book?

A: Probably Robert Mager's Preparing Instructional Objectives (Palo Alto, California: Fearon Publishers, 1962).

Q: Where can one locate Bloom's article, "Learning from Mastery"?

A: It was in the May 1968 Evaluation Comments published at UCLA.[1] It will appear in a book by Bloom and others called Formative and Summative Evaluation of Student Learning (McGraw-Hill). It is an excellent article, very thought-provoking. It suggests, among other things, that there is no such thing as a normal curve when you are working with instruction and bringing people up to performance levels.

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[1] Benjamin S. Bloom, "Learning for Mastery", Evaluation Comment (Center for the Study of Evaluation of Instructional Programs, University of California at Los Angeles) I, 2 (May 1968).

GENERAL SESSION III

Presiding: Raymond Wyman, Director
Northeast Regional Media Center for the Deaf
The University of Massachusetts, Amherst

EXPERIMENTS IN INDUSTRY: PRACTICAL USES OF VIDEOTAPE

Training new personnel is a major and continuing problem for a large telephone company. The skills required of our operators and our field men are many and exacting. To reach thousands of employees spread over a broad area and to bring them clear, up-to-the-minute, practical training in the most economical way possible, we turned to videotape and television. Basically our training falls into three categories: the initial training of employees, introducing new ideas or methods to all employees, and management development.

Who are the training people? Who does the training? This, too, is somewhat different from education. The training supervisor usually graduates to his job by osmosis. This isn't right, of course, to assume that because he has been in the job for a long while he is a good training person. Sometimes it is just the length of service that puts him into this particular job and perhaps he hasn't improved in any way over the way he was taught originally, so you see a continuing type of activity and even a downward activity as far as the effectiveness of training is concerned. So there was one of my major problems in trying to improve the quality of training. A second big problem centered around when training takes place. You say, surely you program this

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An address with demonstrations by Edward W. Palmer, Audio-Visual Supervisor, New England Telephone Company, Boston.

type of training and have things prepared ahead of time. Yes, initial training is programmed; we know when a person comes into work he must learn certain things. But the continuing education too often comes at odd times--on a rainy day for the men who work on the poles or the wires out in the field, or between billing periods in the accounting department, and so on. In other words, it is not the same as a 40-or 50-minute classroom period. All of a sudden we have some free time and we must make this time valuable in training some people.

As far as training tools are concerned, I think industry probably shines very brightly. Knowing that in many cases our training people need assistance, we certainly try to provide the most effective tools possible. As a matter of fact, we try to keep up with all the new ideas on training.

Now, how do we develop good instructional methods under the kinds of handicaps mentioned? We usually try to find that eager beaver, that one training person or groups of training people who really want to do a better job. And so we sit down and study the programs they want to teach and we design tools to help them. Once we make that training supervisor who is enthusiastic look good, others fall in line so there is a sort of backward way of training. This may not seem right, but nevertheless this is the way most people in industry find their solutions to problems of training. We try to stretch the training budget and make the best use of it we can.

In order to train our training people to do a better job, I designed a presentation which I give probably every six months in the company entitled "How to Choose the Right Visual Aid for the Job." Starting with a lecturer who uses nothing in the way of visual aids, I try to impress upon them how much more quickly you can teach and, more important, how much longer information will be retained with the use of visuals. And, in business, if you can train quickly and they can retain it longer, you are saving the company money, and if you are saving the company money you will get the tools to work with.

That was a long way to give you background, but I felt it was important that you find out just what it is we are working with in the telephone company. And I think that it might be of interest to you to see just how we got into the use of television. Let's start out with the first problem we had:

PROBLEM # I: To find a more effective method of showing 16mm motion pictures to telephone operators. This problem had three parts. First, there were not enough conference rooms which could be darkened for showing of training films. Second, travel time to and from conference rooms was wasted time (which means wasted money in any business), especially in some of our larger downtown Boston buildings where it would be necessary to take an elevator to some other floor for the training session. The third part of the problem was that of hardware--there were not enough projectors to do the job. Our objective, then, was to find a way to show training films in or near the work location and turn slack time into productive training time.

Solution: We purchased a film chain projector, television camera, and television receivers, placed the film chain projector in the audio-visual section, and then by video pair connected these areas where the telephone operators were located into a closed-circuit television network. We also wired the sound from the television receivers to a strip of jacks that would permit the telephone operators to plug their headsets into the jackstrip, thereby obviating the noise in the work location and making it possible for them to receive the sound through their headsets and watch the picture on the television screen. This got us started in television. Transmitting from a 4' x 4' space in the audio-visual center's projection booth, we were able to start our television center.

Acceptance of this new method was immediate. We quickly ran out of acceptable training material. This in turn created Problem 2.

PROBLEM # 2: To make more training films. Our objective was to start making our own short training productions to meet local needs, requiring space and equipment for our own television studio.

Solution: A 20' x 30' space in a locker room next to a switchboard area provided the space we needed for the studio and an additional 20' x 20' space provided office and control room locations and a place for the film chain projector and videotape recorder.

Again, the results were an immediate success. These original videotape productions were not professional in nature, but they were sincere and they were done by local people who were recognizable and believable to the trainees. The success of this training device created problem number 3.

PROBLEM # 3: To distribute the new training programs to personnel outside the Boston area. Our objective was to convert our videotape programs into 16mm films. I ran into real difficulty when I discovered that up to that time no helical scan videotape kinescopes had been made.

Solution: Finally, I was able to convince one of the kinescope people at least to try and make one from a helical scan tape. The results amazed both the kinescope people and myself. True, it wasn't the professional quality that we look for in 16mm films, but it was usable and we did get 16mm prints from our videotapes.

Realizing that the areas outside of Boston probably would have the same problems as Boston had in Problem # 1, we sought a more effective method of showing kinescopes to telephone operators in their work location and this brought us to the fourth problem.

PROBLEM # 4: To find a more effective method of showing kinescopes. When we approached the film people with our attempt to convert the 16mm kinescopes into 8mm cartridges, they threw up their hands in horror.

Solution: Again, we didn't listen to the experts. We converted the 16mm kinescopes to 8mm cartridges, and this turned out to be an even bigger success--probably because the screen size was small, condensing the third-generation picture. This size fitted our need perfectly since we could only get two or three girls off the switchboard at one time, anyway. Another advantage was the ease with which the girls could operate the 8mm cartridge load projector. It was as simple to operate as a television set in their homes and even looked something like a television set. Because of its appearance and ease of operation, we found the training people in the field requesting that we convert all of our 16mm films into 8mm cartridges.

Shortly after this success, another problem developed. Even with a crash program, the conversion of videotapes to 16mm films and the subsequent reduction to 8mm took up to three weeks. Now we had a departmental request to duplicate a videotape program and get it out to the field in ten or more units within 48 hours.

PROBLEM # 5: To find a faster method to get training programs into the field. Our next objective was to get a message to 8,000 men within one month's time.

Solution: We rented eleven half-inch videotape recorders and television receivers. We recorded the program in the morning, duplicated the videotape onto the recorders in the afternoon, trained people the next day to thread the tape recorders, and sent them on their way. In 48 hours we had eleven men on the road with the program, showing it throughout the State of Massachusetts. The net result was that 8,000 men (in groups of ten or less) received this message in less than three weeks' time.

The next problem stemmed from a suggestion from the field.

PROBLEM # 6: To develop video playback facilities in field locations. The objective was to make tapes in the Boston studio and mail them to the field locations.

Solution: We installed a one-inch videotape recorder, a modulator, and television receivers in Worcester. This experiment is still in a developmental stage, but it promises to be successful. Currently we are faced with the need to meet the growing television requirements of the New England Telephone Company.

PROBLEM # 7: To meet growing needs for (a) television showings for large audiences; (b) additional studio facilities; and (c) space for preview and experimental work, tape duplication, and future dial retrieval equipment.

Solution: Plans are already underway at our new headquarters building for a 250-seat lecture room in the audio-visual center. With a slight revision in plans for rear-screen projection at the front of this lecture room, we made space for projection television so that we can create a television picture 8' high and 10' wide. The entire rear screen projection area measures 26' x 10 1/2', making it possible to show a 10' wide television picture in the center portion and slides or audio-pictures on either side. A lecturer, with the use of a microscopic television camera,will be able to pick up a picture of something small that he is demonstrating on the platform and have it projected behind him on a rear screen 10' wide.

The projection booth, tripled in size, will also serve as a control room for two new television studios behind the projection room. The two studios are completely flexible--

and can be combined into one large studio if desired. By adding television camera outlets, the lecture room will double as a third television studio with the added advantage of the rear screen wall.

Additional space was found for an office work area plus two small preview areas for previewing tapes or where lecturers can try out their talks before a television camera. What was originally planned as a small storage area was converted into a makeup room by adding two mirrors and lights. Another larger storage area has been converted into a television experimental area, which will eventually become the location for dial retrieval equipment.

I am sure that Problem 8 is just around the corner, but I would like to say this to educators and training people: We are in a push-button, touch-tone, television world, and if you are planning any kind of training program for the future, make sure that the hardware you will use is easy to operate. Otherwise it won't be used. It must be as simple to operate as that television set at home. If the projector requires any kind of threading, it won't be used. It must be in a cartridge! As our educational programs and training programs in industry become more and more complicated, we find we are teaching to smaller and smaller groups and that the self-contained rear screen projector with cartridge-loaded films is the most effective way of showing motion picture or slide films.

In 1965 someone at an audio-visual meeting asked what audio-visual people could look forward to in the next three years. Some of us said that we would like to see a cartridge-load motion picture projector with its own continuous cartridge, a rear screen, transistorized sound, weighing no more than 10 to 15 pounds, and priced at about $100. Most of the people in that room three years ago said it just never would be possible. But an interesting thing has happened. The motion picture industry has become concerned over the inroads being made by television into the training field. Recently I was shown a prototype of just such a projector. It will show super 8mm film on a 4" x 5" rear screen. It has excellent transistorized sound, its weight is nine pounds, it lists for $125 a unit and in quantities will sell for $85. Available on the market early in 1969, this projector could be the motion picture industry's answer to videotape. We will see a great deal of competition in the field.

Again, let's look ahead three years. How will the television industry answer this small, low-cost motion picture projector? I would like to predict that three years from now we will see a continuous cartridge video tape playback unit. What would be its advantages? It would enable one to record a television program in his television studio in the morning, make duplicate copies of this on continuous cartridges in the afternoon, and send the cartridges out to the field. This playback device would cost no more than $200 and would connect to any television set. By inserting the cartridge in the playback device and by pressing one button, they would see a videotape playback through a television set or monitor at the field location. CBS has already developed such a device for film--and videotape will not be far behind. In three years we will have a videotape continuous cartridge that can be sent to field locations overnight and have the programs waiting for use in the morning.

Our experience has been that while each solution to a problem presented us with new demands, we are also expanding our capability to train telephone company employees. With each advance, our people and our management divisions caused us to help them do their work more effectively. A productive training program acquires a company-wide velocity of its own, with room for flexibility to incorporate new training techniques as they meet the company's needs.

Discussion

Q: What was the cost of the dial retrieval system and who produced it?

A: Each one is designed to serve a particular purpose, and I am sorry I don't know the exact cost or the place of the New Hampshire installation but Chester Electronics of Chester, Connecticut, designed it and they are using IVC machines for their dial retrieval activity.

Q: I just had a cost estimate on a system for dial access. The total was $68,000 and the difference between dial and random access was $4,000.

A: Equitable Life Insurance Company has a dial retrieval system in New York also put in by the Chester Electronics and that also happens to be IVC equipment. The IVC is ideal for this type of thing because it can be rack-mounted and as you start to talk about space you look for a way to put maybe three tape recorders in one bay. Of course, Ampex is now coming out with the 5900 which can be rack-mounted, but I believe only two units at one time because they are put up on the long way rather than the short, as with the IVC. I think you must realize that we are still in the pioneering stage and the fact that a machine doesn't work today shouldn't upset anybody. I certainly am enthusiastic and I feel that we are on the threshold of a tremendous revolution in getting video information across to people more quickly and more effectively than ever before. And, as to retention, we know that we have to go visual in order for people to retain what they are learning and this is opening all these doors for us.

Q: It seems to me we have a problem in that much of the equipment we buy becomes obsolete very quickly. The Mark IV projector, for instance, really hasn't been on the firing line too long and already we are moving into much cheaper, much more appropriate types of materials. Do you have any idea or any suggestions as to what a reasonable time factor should be in terms of use within a school for equipment that you buy either in television or film?

A: Let's take the Mark IV for example. Sure, we had problems just as many other people have had with magazines and this became a production problem with the people who were producing the film. Although we wore out our units in two years, we got back all the money that we had invested in this particular thing. If, however, you are buying a whale of a lot of equipment for which you have no immediate use, this is when you are looking for maybe five years use. I have been concerned because our company won't move right now into the field of dial retrieval and my boss, when he was trying to calm me down a little bit, made a very good statement: "Ed, you get about 400 videotapes all stacked up in the closet there and then tomorrow we will go into dial retrieval. So you go back there and start making those tapes." And he is right. When you have the software available, I think you will find that the equipment will come along automatically. This is a big mistake a lot of people are making now--they are going out and buying equipment because it is pretty even though they have no real need for it. Somebody has got to do the experimental work and I think it is wonderful what is being done here. But, I am talking about the schools, when the superintendent goes to AASA or another convention and says, "We just bought a whole bunch of equipment back home and we hope you can make it work." This is happening in business, too. A person will come back from an AMA meeting in New York and tells his training people, "I just bought a whole new television studio. I hope you are going to like it." And they ask "Why?" Well, he didn't have any objective--he just thought this was the thing to do. A lot of fellows have really been in trouble this way. But when you have the material developed and want to get it out to your people, the equipment will come automatically. We have, as I said, 4900 playback units. I hope we will wear these things out in three years and maybe video cartridge playback units will be available. I don't expect any of this equipment to last beyond three years if it is really used.

By the way, there was one more piece of equipment I saw last week which excited me because we were working toward getting the equipment into our new television studio. We have already bought a Polaroid camera for making the title slides for use in television and the 3M men came in with the new slide projector. Has anyone seen this? You can make these slides by just typing the copy and running it through the Thermo-fax, as you did on your 8 1/2 x 11, and you come out in four seconds with a little transparency that will snap into a plastic frame which is an interesting invention. The plastic frame will take not only slides but the Polaroid slide transparency material also. Polaroid is quite excited and happy that 3M came up with this. The interesting thing about the slide itself is that it has a little groove built in so that each slide becomes its own tray in itself. In other words, each one locks into another and you build up a tray as long as you want it to be built up, set it into your projector, and with your remote-control unit it slides into the projector and back out again and moves to the next one again and in and out. It is something I had never seen before. You have your whole carrier all built up into a slide projector. It has some interesting possibilities. They are also about ready to come out with transparencies in color, which will offer other possibilities for the 3M machine. I guess it will cost about $450 and the brillance is tremendous. So here is something new on the market that has a lot of connations for use in television.

SPECIAL DEMONSTRATION OF CAPTIONING EQUIPMENT

The Southern Regional Media Center for the Deaf, as most of you know, is one of four resource centers established in 1966 by Captioned Films for the Deaf for the design and demonstration of new instructional media for teaching the deaf. Along with the initiation of a wide variety of projects and activities came the awareness that each of the four RMC's possessed unique resources and capabilities for the development of a rather specific area of instructional media. At the Southwest RMC, Marshall Hester became involved with programmed instruction. Bob LaGow is here from the Midwest RMC, where primary attention has been given to film production. The Northeast RMC, represented at this workshop by Joe Panko, has developed a visual response system for the classroom. To the staff of the Southern RMC, video technology appeared to offer unlimited opportunities for improving deaf education and the major thrust of the experimental phase of our program has been in this direction.

So we have here at Knoxville some capability and potential with videotape, television production, training, and related activities of a research nature. We are going to try this afternoon to demonstrate a few techniques and ideas that we are working on and get your reactions and suggestions. The first presentation we have for you

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Introduction by Dr.William D. Jackson, Director, Southern Regional Media Center for the Deaf, Knoxville.

is a rear screen unit. This unit costs $234, it is plastic and portable, and it is designed for televison projection. The objective we have in mind for this auditorium with the loop system [at Tennessee School for the Deaf] is to provide a method of projecting television images to large groups, particularly deaf people. We will show you some potential uses of this equipment, and I am sure you can come up with others. The television projector was purchased used from a local television station for $600 when they went to color and had no use for black and white units. A new unit of this type would cost around $3,000. We are hoping to set up a television studio in our facilities on The University of Tennessee campus with adjacent rooms so that we can begin to experiment with makeup, lighting, and some of the other problems of just recording on videotape.

Then, we hope to utilize the captioning device. We know there are a lot of problems related to reading level, sequence, timing, programming, and all these kinds of things. Coming out of a research project in New Mexico on perception of your deaf children are some interesting results related to color, form, and so on. We are hoping to become involved with some research in the Appalachian region to teach children to read by watching television and to use findings of these and similar projects in working with deaf children.

Today we have with us some representatives from commercial companies, A.B. Dick and Signal Engineering. The Southern Regional Media Center for the Deaf has just acquired the captioning equipment which will be demonstrated. We also have a color monitor and a color videotape recorder with remote control. There are some other things we would like to demonstrate but cannot because of certain problems. So, the intention is that the color receiver becomes our quality control for anything we produce, the captioning is the means by which we can insert captions as desired, and with the studio switching capability we can then edit electronically. Once we get the $100 projector Ed Palmer talked about, hopefully we can videotape in color and convert to 8mm cartridges for testing or for distribution. This, then, is the general direction in which we are trying to go. So, if you have questions or suggestions, please bring them out.

--DEMONSTRATION--

GENERAL SESSION IV

Presiding: W. Lloyd Graunke, Superintendent
Tennessee School for the Deaf, Knoxville

APPLICATIONS AND DEMONSTRATIONS

Callier Hearing and Speech Center, Dallas -- Charles Thompson, Administrative Assistant

The Callier Hearing and Speech Center has three major divisions--education, clinical, and research. We are medically and research oriented and a little later I will show you tape clips and slides of the different operations. We work with all ages, children and adults. We are uniquely blessed in having a brand new center, located on about five acres in the medical center of Dallas. So let's take a short walk across the buildings. [Visual tour of physical facilities.]

I have been asked to elaborate on the utilization of videotape equipment in our program at Callier. Some of the uses we make of it are these:

1. To provide first-hand language experiences for the children and promote language development.
2. To provide a means of self-evaluation for the teacher as she views her actual performance in the classroom.
3. To give the substitute teacher an idea of what goes on in the classroom and serve as an introduction to the pupils with whom she will be working.
4. To prepare in advance for classroom activities in the case of pre-planned absence of the regular teacher.
5. To give student teachers an overall view of our operations and the opportunity to work with equipment new to their experience.
6. To generate interest among prospective parents and students as well as the general public. By means of a filmed presentation, we are able to show in detail all the different aspects of our total program.

7. To enhance the guidance and counseling services. Clinical staff and parents sit down together to watch and discuss the child's reactions and problems in a given situation.

Our videotape equipment probably receives the best usage of any equipment we have. It is portable, durable, and highly useable and can be extended into all areas. To insure a meaningful experience and a specific language, these presentations are carefully planned in advance.

Here is a typical classroom at Pilot School. The sink is on the side with the teacher's desk and her professional library. The teaching wall is a magnetic chalkboard, cork above and below. The screen, which we designed and made, operates on a sliding panel for overhead or normal front projection. Behind the teacher's left shoulder is the light control panel: one switch for the front panel of lights for the overhead, two for all of the lights, and a rheostat spot that lights up her lips for speechreading purposes. On another side are two large walk-in closets, vertical files, and central intercom system. The display wall with alternating panels of cork and pegboard is something that Bill [Jackson] put in and it is very, very handy.

All of the tapes you have seen here today were shot by teachers or students. So I don't apologize for the quality. Some were their first attempts at shooting videotape and I think they have done a good job of it.

Now we will look at some activities in the research labs. We have two teams working: neurophysiology and behavioral science....

Discussion

Q: I think we all are overwhelmed by everything we saw. I kept thinking of how many man-hours went into the planning and the designing of all the equipment and then how those man-hours of planning were implemented in the actual facilities you have come up with in a relatively short time down there.

A: One amazing thing is that everything you saw today is paid for by the people in Dallas, private subscriptions. There are no state or federal funds in the organization at all. The only federal funding we have now is in various research and equipment grants. Callier was organized four years ago and since that time we have designed, built, and moved into the facilities you have seen on the tapes and slides.

Q: In terms of planning a new building for media, can you tell us some of the things which we should certainly include and also some of the problems you might have run into?

A: Bill Jackson and I worked on this together. I came in after he left and had worked a little with him on the preliminary planning earlier. If you're working on a new building, I would say, throw in everything you can think of and then triple it--especially in the area of power. We asked for three pieces of conduit from front to back of each classroom; we got two and I wish we had four. There are a number of things like this you can do in construction very inexpensively. As for media, the thing you have to do first is say, "What are we going to do in this room?" You must have behavioral objectives for each room.

Jackson: I might add that when talking with the architect in the planning stage we had a practicing electronics technician who knew the actual problems of maintenance on equipment and planning for practical use. We had frequent brief meetings to talk about conduit, lighting, acoustics, and a lot of other things. So, we were able to look at things done elsewhere and come up with practical solutions. We went through this for about two years and we were fortunate that the architects were willing to listen and go with us wherever necessary to get information on each of these things. If you're building an electronics lab, get an electronics man. If you're building a photo lab, get an experienced photographer.

Hicks: When you get all of this on paper, don't assume that it will get translated into the building. We literally sat on the builder. Thankfully he didn't get too exasperated with us, but there was at least a crisis a day during the process.

Thompson: Another point when you are building, throw in some space underneath. We have a four foot crawl base under every building in case we did forget to put something in. We can drill a hole and go back up anywhere we want.

Jackson: In terms of media, all the way through we were looking at what we thought was coming and the economical way to plan for it. Rather than saying, "We have always done it this way," we said, "What's a better way to do it?" Because of private money, we had freedom to go to whoever was necessary to get some answers and try them out before we really went into the building phase.

Thompson: If you're going into a building program let me give you another tip: Don't move into the place until it's finished. We ended up moving twice, once in the snow and without parking lots or sidewalks.

Q: In your actual situation, have you found some things which you wish had been planned differently that might be of some benefit to those of us here?

A: We must have run through $90,000 worth of change orders after we started construction. There were lots of changes in the media also. In fact, we are still changing. You just have to go ahead.

Q: Those teaching stations do seem awfully wide. What sort of isolation do you have between them?

A: We have six, in groups of two. They are widely separated, and there is pretty good sound isolation between. The working area is only four feet. We have an L shape and it's not as large as it looks.

Q: Was that one-way glass?

A: No, not in that area. We have one-way glass above it where you can look down into it. Every room has an observation deck over or next to it.

National Technical Institute for the Deaf

--Jon Rawleigh, Research Assistant for Media

Last year when I was down here, I met a lot of pretty scared people. They had been given money to buy equipment and didn't know what they wanted. All they knew was that they had to buy equipment. So this year, I thought I'd help out a little bit by offering suggestions on how to use a one-camera system and possible extensions. However, after being here awhile, I feel I am in the wrong ballpark. I hear people talking about things far removed from a one-camera system. So my only suggestion is that if there are any of you who remember what a one-camera system is, I'll be glad to talk with you and to you. The rest of you who are above and beyond the one-camera system can go to an early lunch. [Videotape presentation with commentary.]

Audio-visual technology provides the instructor with the means for extending a variety of experiences and makes possible a broader range of sensatory stimuli to provide a broader experience. Since the task confronting education is now greater, instructors need to be prepared for more experiences, different directions, facts about situations, and valid descriptions. Consequently, there is a need for additional sources, that is, new media which enhance clarity of communication and speed of comprehension. Just what does "audio-visual" mean? "Audio" is the use of sound in a manner which best influences the listener in the direction in which it is intended; "visual," the use of photography or graphics to evoke a particular response in the direction in which it was intended. Audio-visual now becomes a combination of two effective means of communication, each reinforcing the other to transmit a particular message with the desire to evoke a particular response. In cases where deaf students are handicapped by the lack of audio as a reinforcer, audio-visuals may be the answer to evoke a particular response. My presentation today concerns itself with the application of television in the education of the deaf. The philosophy of the presentation is threefold: (1) to apply new concepts and try to evoke new concepts into the field of communication which is the base of education, (2) to strive for quality, and (3) to free ourselves from forcing one medium to do the work of another. Often color is a very important part of an instructional or cultural situation, most often solved by a description. One of television's strong points is the ability to hone right in on a tight shot. However, in working with charts or graphs when comparison or contrast is needed, broad shots showing the whole charts will often lose detail and can't be used. A slide might solve that problem. Another common problem is that of captioning. I would like to show you two or three short segments from previously recorded programs showing this concept....

This is one of the most sophisticated computers available. We need not concern ourselves here with the actual computer. Instead, let us observe only that portion of the system with which the student comes into direct contact. Now here we see a student counter, the type we will be using on our 1500 system. This is a

TV-like tube at the right; information typed on the keyboard by the student will appear on this tube as well as being fed into the computer. Letters, numbers, symbols, and even simple graphic illustrations can be stored in the computer for later display on this tube. The light end you see here can also be used to identify words, sentences, or even portions of graphic displays on the tube and thus communicate directly with the computer without having to use the keyboard. The rear projection screen at the left is for either black and white or color pictures stored in the projector which, of course, is controlled by the computer. This rear projection screen and two combinations will permit simultaneous display by the computer of all text material and graphic material. Now, let's turn our attention briefly to the programmed material, the software used by the computer. Here we see the basic relationship between the program in the computer and the student. The course program stimulates the student, the student actively responds to this stimulus, and the course of programming provides feedback information indicating whether the student is right or wrong. This next illustration suggests a simple program. The student is provided with the stimulus, he responds and receives feedback, then the next stimulus is provided, and so on. We use this concept very effectively during the summer training institute for faculty members....

Discussion

Q: Did you intimate that one-camera television was in decline at the present time?

A: Not necessarily. There are many uses of television which are very valid and very good and which people talk about around the country but never use it for. They are always trying to stretch it to do work that it shouldn't do, that perhaps could be better done by another medium.

Wyman: On our campus we have gone through a one-camera to a beautiful multi-camera studio operation and back again to a one-camera, quick and dirty operation for most things, which is dismaying to someone who has had any background in what can be done with television. But if people won't do it, the fact that it can be done is inmaterial.

A: When you tie up a studio to use three or four cameras, you're talking about men, you're talking about time, you're talking about equipment--all of which cost money. I would much rather see an effective use of one camera and start justifying *why* we do things, rather than just doing them for the sake of doing them. A talking face using four cameras to give different angles is pretty poor justification for a four-camera studio.

Wyman: Both of the presentations we have seen this morning made use of one camera plus another medium rather than two cameras.

Graunke: It gets terribly boring to watch the same shot all the time on the same lecturer, and the effectiveness of getting the information across is equally affected. In commercial television they switch shots about every five seconds, using three cameras. It helps to keep the mind and eye awake and alert to what's coming over.

Wyman: But does the second medium or the presence of the instructor in the classroom make up for the use of only one camera?

Graunke: My comments were in terms of making a presentation such as has been made here this morning. The teaching situation is quite different.

Rawleigh: In response to that also, it is one thing in a commercial situation where you have an interviewer and guest to switch from one camera to another in order to keep your audience. In education, however, we cannot afford that excuse. We can and must do better.

Q: Would it be better to wait until money is available for all this fabulous equipment or get first into a one-camera system?

A: It comes back to behavioral objectives. If you can define what you want to do, you can define your equipment needs. If you want to do certain things that can be done by a one-camera system, fine, do it. If your needs are elaborate, then you need more equipment. But I think that's up to you to discern.

Q: [At the Callier Hearing and Speech Center,] could you use a surveillance-type camera, remote-control type, in your classroom situations so that you wouldn't have to shoot through the one-way window?

Thompson: Yes, the front of each deck has a camera point that will be on a closed-circuit television system, and we're planning on using it. But in our position here, a student checks out one camera and takes off on a field trip. We come back from the field trip, put the tape on, play it back--immediate reinforcement; next day we'll use it again. After the kids get through, it becomes an effective teaching tool. But I don't think we are setting up for multicameras; we're buying about twelve more units, five generator panels, and all this, but I think our basic thing will be a single camera.

Jackson: I'd like to add a comment in regard to the rest of the program. From this point on, we will see some actual applications of both kinds of setups in schools and programs. I think these will better answer the questions about a camera and how you start. I'd also like to stress at this point that you will see uses of the camera and other applications which do not require all the sophisticated equipment we're seeing. But it goes back to what Jon was saying: You must know what your objective is and then purchase equipment for that objective.

Rawleigh: I have given a lot of presentations using graphics despite the fact that we have no graphics department or elaborate facilities to produce graphics. Today's production, for example, was done with two students. I talked briefly with one student (who was paid $1.65 per hour), explaining what I wanted, and then let her go ahead and work it out. The other student ran the camera and tape-deck and we did the video portion on my lunch hour. So, there are people available to do work for you at nominal cost.

Q: What's going on at NTID?

A: I think we are going through a period of transition, re-evaluating things previously set up. As far as media goes, we seem to be running into this basic problem of redefining some objectives--finding out just what it is we really want to do and identifying the appropriate media to do the job. We're getting into film, into more slide audio, and we're beginning to use television more as it should be used and to develop programs.

Gates: Academically, we have been operating on an interim basis, as some of you know. Our intern program will continue until our own construction is completed and in Rochester it's hard to say just how long this might be. But we have initiated our individualized preparatory program (which can run from three months to one year depending upon the needs of the student) to complement our degree program, which integrates deaf students with our support services into the RIT degree program. Next year we will expand to 250 students and also initiate some programs in the diploma area, which is a less than a degree-type program. We are beginning to gather considerable data from our research division and we're bringing in staff to complete this project. And we'll be initiating teacher-training activities, an internship program for graduate students, and some other things. That's a very brief description of how things are going. We're suffering from space shortages now, because RIT did not project NTID into its future construction plans.

Kansas School for the Deaf -- E. Kendall Hanks, Director of Instructional Television

Last year when we had the first television conference here, I had just signed a contract with the Kansas School for the Deaf and we have been trying lots of things. Now, I am going to do a Rowan and Martin here to show you a little of what is happening in Kansas.

First, let's have a quick tour of the studio. This is our console with two Ampex tape recorders, the 7800 used primarily for recording, the 5000 for playback purposes. We have six 9" television monitors and a modulator in the console for the two channels that we cover. A camera on the tripod was being used for titling and captions and so on. I had this little stand built and it works very nicely--Hank's fantastic rolling caption machine. We type up our captions on adding machine tape, then sit at the console and roll them. Very nice, very simple, and it works. We telecast on one channel and use the other channel as a bulletin board notifying system. The latter was originally thought of as an easy way of communicating with the deaf teachers--messages, station schedules, and the like. (Posting schedules is a mixed blessing as far as I'm concerned because some teachers will use anything to kill time and keep from having to do what they are paid for.) Every Friday afternoon we present a wrapup of what has been happening around the campus during the week plus a little segment of national news. Children are used on this newscast and we have found that they watch it better, enjoy it more, and are more meaningfully involved if they are actually working on it.

I also believe very strongly in letting the teachers' enthusiasm build gradually and providing them with any support I can so that it is pretty much their project. Here we go into teacher-designed presentation. This was planned, developed and the scenery done by one of our classes in the upper school for the children in the primary department.... We taped a National Theatre of the Deaf program and several teachers used it for various purposes in the classroom.... For preservice and inservice teacher training, we have been working on a series of tapes of experienced teachers doing some sensitivity training....

We were asked by the Kansas University people to tape student teachers at work, and again this is a service we can provide. Here's one of our student teachers at work. We find that the Porta-pak sound is surprisingly adequate for this sort of purpose even if I don't use the extension cord on the mike.... Some of our more experienced teachers want me to come in and tape them, which I think is a sign that they are trying to grow and improve a little bit. When asked to tape a field trip, I insist on a previsit to the site to shoot a little bit of vocabulary. And I tell the teachers to prepare a list of the things they want to shoot in the proper order so that we can get them most conveniently. So here we are in a little department store looking at shoes and shirts. Two days before the field trip, I took the half-inch playback to the classroom and plugged it in to the television monitor, the teacher used the tape to teach the vocabulary. Now here we are on the day of the field trip, just following them through the store and making sure we had good closeups of everything that was of much importance.... Here's one of our student teachers doing her project in speechreading lessons. . . .

One morning a teacher came to me and said, "I have a problem." She had a group of very slow first-graders and some of them were very disturbed over a movie they had seen in which a man got killed. Nothing she could do would convince them that the man wasn't really dead. I said, "Let me think about it and perhaps I can dream up something to show the children that things they see on television or in the movies are not always real." And so we got a big box and put the children in the box, one at a time. We would stop the tape, back up a little bit, pull the child out of the box, and then show the tape. The children sat there absolutely amazed. They knew exactly what had happened and that the box was now empty, yet they also knew what they were seeing on television. At last they realized that the things one sees in the movies and on television are not always true. Here are some pictures they drew for me. . . .

Discussion

Q: I gather from some of your comments that your classrooms are wired and that you have a receiver in every classroom?

A: No, we don't have receivers in every classroom yet. We have 85 outlets on our master antenna system and most of the major buildings are wired. We have J-jacks all through the system, which allows modulators to be installed wherever needed.

LUNCHEON SESSION

Panel: Robert LaGow (Moderator), Midwest Regional Center
Doin Hicks, Pilot School for the Deaf
Edgar L. Lowell, John Tracy Clinic
Martin Fass, Xerox Corporation
Floyd Urbach, University of Nebraska

TELEVISION TYRANNY

The theme of our meeting today is the use of television in the instruction of deaf children. I thought that it might be of interest to share some of our experiences and reactions after more than three years of working with one particular aspect of educational television.

I should make it clear at the outset that I am enthusiastic about the potential value of videotape in the education of the deaf. I do not believe we have begun to realize that potential. A number of applications are in common usage at this time. In our parent education program at John Tracy Clinic we are able to put on much more effective demonstrations when all the parents can sit confortably in the auditorium while watching the demonstration instead of being crowded into an observation booth looking over someone's shoulder. We are also able to control what the parents see. The camera can be focused on the most instructive aspect of the demonstration, while in the observation room the parents may be concentrating on something less essential. Videotape also has untapped potential in the supervision of student teachers and inservice trainees. It provides an opportunity to capture on tape the special lesson or exemplary activity for viewing within your own school at a later time.

Paper prepared by Dr. Edgar L. Lowell, Administrator, John Tracy Clinic, Los Angeles, California.

There are, however, obvious limitations on the extent and value of strictly in-house productions. Sooner or later we want to begin exchanging ideas, concepts, and demonstrations throughout the country. It is here that we encounter one of the first tyrannies of television--that of lack of compatability of different types of equipment. Standardization at this early stage of the rapidly developing art might be inappropriate, but lack of standardization impedes the exchanging and sharing of videotaped material between institutions. A simple solution, we thought, would be to transfer the videotape material to 16 or 8mm film where the likelihood of other schools having compatable projection equipment is much greater.

Under contract with Captioned Films for the Deaf, John Tracy Clinic is producing a series of 52 films on the teaching of speech to the profoundly deaf. The series is planned to deal in considerable detail with the techniques for teaching speech to young deaf children. The films hopefully will be of interest and value to teacher training programs and for inservice training. In addition to the 52 films, we are producing 30 audiotapes designed to teach the student an orthographic transcription system, recognition of speech errors, and particularly recognition of typical deaf speech errors. The decision to use videotape rather than filming directly on 16mm was based primarily on our plans to use preschool age, profoundly deaf children as subjects for the majority of the films, The fact that these children could not be coached or directed in their performance made it highly desirable to be able to shoot as inexpensively as possible with provision for immediate review and possible reshooting while the child and teacher were still available. This was particularly desirable because in some of our films we attempt to show the actual development of a child's speech over a period of time. It is my hope that some exposition of the tyrannies we have been subjected to as a result of that decision may be of interest to the educator contemplating an investment in videotape equipment at this time. They may even be of small comfort to you as you brave the hardships that inevitably accompany the exploration of something new.

One of the more interesting tyrannies was that of the equipment salesmen. Remember that we embarked on this program in the relatively early stages of inexpensive educational videotaping equipment. Much of the early equipment simply did not function in the manner described by the smiling salesmen or in the advertising brochures. Some of the earlier equipment was unquestionably faulty, and to the credit of the manufacturers I would hasten to add that it was cheerfully replaced. One aspect of this tyranny was to underplay the proficiency required to produce a reasonably creditable videotape and to keep the equipment in operating order. The demonstrations we witnessed were put on by people who we now realize were so highly skilled as to make everything look easy. We left the demonstrations with the feeling that this was the sort of thing anyone could do. Little did we know about the importance and the messiness of cleaning recording heads and making the many minor adjustments necessary to keep the equipment in topnotch operating condition. I am happy to add that this situation has improved greatly since our early experiences, but I warn you to beware of the salesman who makes it look too easy.

The next tyranny we encountered on our perilous journey was that of the video-technician. It was obvious that if our equipment was to function effectively on a full-time basis, we had to have someone on our staff to care for the equipment. Technicians shattered any last remaining vestige of confidence I had in my own understanding of videotaping. Their talk of proc amps, EIA Sync, and particularly those requests for calibration equipment which cost much more than the outlay for the original equipment only reinforced my feelings of hopelessness. While it is true they were able to keep our equipment in constant operation, they were also careful to destroy whatever vestige of self-confidence I was able to muster through careful study of the information gained in our last meeting. At just the point when I felt I could understand what they were talking about, they would launch into a new and completely unexplored realm of technical jargon which left me completely confused. I have finally resolved this dilemma by conceding that the technological advances in this great country of ours are so rapid I will never catch up, and so I have put my blind faith in the hands of our video-technician. I believe.

The next tyranny that we encountered because of the peculiar nature of our project was the tryanny of the film makers who somehow believed that preparation of some films on the teaching of speech to the deaf might produce candidates for an Oscar. You can hardly imagine the extent of their disillusionment. The reverse side of the coin was that we did not have a full appreciation of the skills required in film making. To our dismay we found there was a genuine discipline to be learned. We had to have a shooting script, which we learned takes much more time to produce that the actual shooting of the film itself. Even our most experienced teachers, although quite capable of teaching the actual lesson, were unprepared for the rigorous demands of producing a shooting script. To compound matters, the best plans of a shooting script often went down the drain when a two-year-old deaf child failed to perform according to the script.

We also learned that you had to have such things as a makeup room. Makeup, I must confess, was something I thought girls did at home, but we soon learned that regardless of how attractive our teachers might look in the flesh, there was frequently a washed-out quality on videotape that could only be remedied by the judicious application of some special makeup.

Lighting no longer came from sunshine or the existing lamps in the ceiling but from a complicated array of mercury vapor lamps with hoods, snoots, barn doors, and scrims. Worst of all, the mercury vapor lamps didn't last very long and were very expensive to replace. In defense of careful lighting, I would be the first to admit that it did improve the technical quality of the films and helped to eliminate some of the washed-out quality that seemed inevitable in the transfer from videotape to 16 or 8mm film. It also produced another type of tyranny which we had hoped to eliminate by the "in-house" shooting. We had abandoned shooting directly on 16mm in a regular studio because of the inordinate time that it had taken to adjust the lights after we had brought our young pupils and teachers to the sound stage. By the time the film makers were ready to "roll" the child was frequently ready to go home. We now found the same situation even in our own modest in-house productions.

Still another tyranny, and perhaps this is associated with the fact that we are located so close to Hollywood, was that many of the people available to work with us on this project were oriented to the Hollywood style of doing things. Where we had contemplated that one person might help write, direct, and shoot the film we found that there were separate Unions for each of these activities, and at times it seemed as though we were degrading the "movie maker" when we asked him to perform these multiple roles. I am of course speaking partially in jest, but it is true that our teachers on more than a few occasions would wince upon hearing themselves referred to as "talent" and the commands of "quiet on the set"--"roll 'em" somehow changed the atmosphere of our quiet little school for deaf children and their parents.

It must be obvious that our concern for widespread dissemination of our videotaping efforts involved a great deal more than we had bargained for in the beginning and the operation was not, as we had naively believed, as easy as using one's home movie camera. On a more cheerful note, we are pleased to report that we have survived these tryannies and believe that we have profited from them. We have learned that the process of transferring from videotape to 16mm, while practically impossible in the early stages of our project, is now improving to such an extent that it will ultimately be a commonplace event. Now, too, we have had the great fortune to capture and be able to show others some very excellent and hopefully valuable information about teaching speech to the deaf.

What general conclusions can be drawn from our rather specialized experience? I think that the typical educator of the deaf, if not already exploring videotaping, should do so immediately. It is true that equipment is continually changing and improving, but I know of no way of outguessing the manufacturers. If you wait until all the problems are solved, you will be missing valuable years of experience with an exciting new educational tool. I would counsel you to beware of the salesman who makes it sound too easy, or the technician who makes it sound too complicated. I would also warn you against a new type of tyranny developing within even the deaf education group. I have heard the interested educator ask the videotape expert, "What kind of equipment should I buy?"--only to be rebuffed by the reply, "Tell me your educational objectives and I'll tell you what equipment you need." On the basis of our experience, I would say that such a remark is premature. Educators of the deaf have so many imperative objectives that they can only begin to single out one or two that would benefit from the potential of the new media after they have had some experience with the videotape equipment. My recommendation is that you get into action as soon as possible. My prediction is that you will be alternately thrilled and disappointed with your efforts. My conviction is that you will be in on the ground floor of one of the most exciting developments in deaf education in the last 100 years--and I wish you well.

RESUME

Media specialists and teachers interested in making particular application of television to instruction of the deaf need to be cognizant of several distinct areas of utilization. The luncheon discussion served to highlight the number of viewpoints and the difficulty of holding a coherent discussion as the basis of function shifted many times. It is my purpose to suggest that it would be helpful to consider the various functions separately in order to avoid both competition and undue antagonism of people working with a common medium but with divergent instructional philosophies and objectives.

I. Instructional materials for the deaf have recently focused quite heavily on film media as a visible and audible vehicle for instruction. Television equipment of medium complexity can serve as a comparatively inexpensive technique of producing films or of using videotape replay in lieu of film. Special effects generators permit split screens; titling devices can be superimposed for captions; electronic editing is easily done and duplication is reasonably efficient. A poor take can be redone using the same recording materials, or new materials can be made over many times. Inexpensive studios or even classrooms can serve as production areas if

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Summary prepared by Dr. Floyd Urbach, Assistant Professor of Secondary Education, The University of Nebraska, Lincoln.

professional studio facilities are deemed too expensive or are otherwise unavailable. In fact, the classroom is rapidly becoming the utilitarian television studio. Technical control of lighting, sound, and even camera angles is being sacrificed to gain less expensive but instructionally adequate classroom materials. Even more valuable to both teachers and students are locally produced materials in which the whole class shares the excitement of using materials that they have also produced. Television may be used as a film medium. It is instructionally sound and economical to do so, given instructional objectives suited for the film medium. Using television as a film medium, however, is not the only potential for television in the education of deaf children.

2. One of the more interesting applications of television in the classroom could be labeled "the nonproduction-production." In this function the videotape recorder serves as a short-term memory bank which can be tapped at will. The nonproduction-production is produced in the classroom by the teacher and/or students. It is designed to be discarded (erased) immediately after it has been produced and replayed. The key to learning here is the motivation resulting from total involvement in the production and viewing of the instructional episode. Excellent demonstrations of the power of this technique have been shown during the course of this workshop (e.g., the Speech Through Vision Project and Arkansas School for the Deaf). In terms of general education functions, this is very close to the microteaching concept of "teach-critique-reteach" which is currently being widely adopted for preservice and inservice teacher training.

As was aptly stated in the workshop, "Television is the most cruel, the most accruate record of a person." It can also be stated that it is the most fascinating as well. Few students are unaffected and I know of no student who has not wanted to see himself once he has been videotaped. There is a great deal of personal motivation in seeing one's own image appear on the monitor. The attention span and concentration of children in watching themselves are phenomena which every teacher should seize upon and use supportively to encourage the pupil to see himself again and again.

3. A simple but seldom used capability of television is enlargement. Not only can such difficult psychomotor skill-related tasks as microphotography (very proficiently demonstrated by the Tennessee School for the Deaf) be prepared by the teacher or the technical support staff, but it can also be used to permit the whole class to see a small visual that would take a graphic artist hours to enlarge or reproduce. It can present complex three-dimensional objects on a two-dimensional screen which can be seen by all students on the monitor (such as a science or shop demonstration). In these functions nothing more is needed than a fixed camera and a monitor. The impact is now--immediate. This visual enhancement can provide a better visual impact for all students, not just the two or three who are at that best viewing angle of the demonstration table. A host of picturial sources become immediately available from newspapers, magazines, and so on. Student reports, current events, and other graphic materials can be readily

seen on the monitor without any preparation other than setting up the camera. No artists, photocopiers, enlargers, reducers, or other technicians are involved. This makes it possible to use many materials which would otherwise not "be worth the effort" even though of momentary interest.

4. Perhaps the most common use of the videotape recorder in general education is to tape programs off-the-air or to transmit instructional programs via a closed-circuit system. Commonly called "instructional television," this use is limited to replaying programs which provide the instructional content for a particular lesson in the class and has been developed for mass distribution of a common curriculum or supplementary set of materials. Special adaptations of these programs may be useful. The basic format is similar to the film media in that the television equipment is a display medium and not an integral aspect of instruction.

Classroom instruction using television has many forms. A few of them have been presented for consideration. Only when the functional objectives have been defined for a particular kind of learning for deaf children can the most efficient medium and strategy be selected. Television can be merely another projection device or it can be an important motivational tool for the learner. My own learning is to experiment with those strategies of learning which involve the pupil.

Media technologists, especially some television technologists, have a certain snobbishness for the home movie aspects of television production. Occasionally technologists become overly fascinated with quality equipment or production techniques unessential to the learning task of the pupil Sometimes a particular format is stressed to the exclusion and/or suppression of direct uses of television by the teacher or the student. Likewise, there is a tendency of the "here is how I did it" television teacher--like the home movie fan--to show it all regardless, just because "he did it." In between these extremes is the powerful impact of television on the student. Experimentation in careful and considered uses of the medium must be encouraged in all of its many forms. Television can strengthen instructional programs for the deaf if teachers, media specialists, film technologists, television technologists, and the ever curious minds of our pupils are permitted--nay, encouraged--to "try it out, just to see what happens."

GENERAL SESSION V

Presiding: Roger M. Frey, Professor and Head
Department of Special Education and Rehabilitation
College of Education
The University of Tennessee, Knoxville

CONTINUATION OF
APPLICATIONS AND DEMONSTRATIONS

Tennessee School for the Deaf -- James S. Howze, Media Specialist

This is a demonstration of microphotography in a science laboratory. We tried to see what kind of illumination we could get and, just using part of the filter bar to cast a shadow, we came up with some very interesting effects . . . . But you can imagine trying to show this to a class by letting each pupil look through a microscope individually. It would be pretty well impossible. One thing I had never seen in all my life before this was the bacilla, the little hairs the cyclops moves with. Under high magnification, see how the body twists and moves. . . .

Arkansas School for the Deaf --Al Simmons, Educational Technologist

We find the video monitors helpful in many ways. When visitors come, they are invited to sit down in an office or the auditorium and watch the activities in a classroom without distupting the class. A student teacher can tape her performance in the classroom, take it to a private viewing room, play it back, and criticize her own teaching without any expert opinion. Our first and second year teachers, too, can record their own actions, perform their own critique, and then erase the tape. News programs are recorded directly on a television set, then played back so that we can stop after every segment of news, write it out on an overhead projector, and discuss it with the pupils.

Here is a normal little classroom teaching experiment in our high school speech class. The students talk and read and then instantly play back the tape and correct their speech. Or the teacher tapes herself speechreading, then sits in the back of the room while the children try to read her speech. Or she puts audio equipment on the kids and talks into a microphone. By using the videotape, she actually becomes two teachers and she can observe the children at the same time she is teaching them. . . . This boy has on earphones, and on the playback he not only sees but also hears himself within the limitations of his hearing. It's quite an interesting experience to try to read your own lips and something the deaf people I know enjoy doing. Or videotape yourself fingerspelling and then try to read it--sometimes it comes as a surprise to discover you can't read your own fingerspelling! We try for total student participation. If a teaching machine can teach these children, there is a strong possibility that they can teach themselves, with the proper media presentation. We must recognize our own problems and then design our own media to meet our own needs. . . . The beauty of videotape is the instantaneous personal involvement. Understand that this is only one tape made in only one of our classrooms. The same types of activities are going on in all five units of our school: lower school, middle school, upper school, vocational unit, and the new exceptional unit. . . .

I believe this one tape will illustrate to you some of the possibilities for videotape application with the single-camera concept.

Discussion

Q: How many tapes do you have available in your software?

A: I started out with twenty tapes, but soon split them up into shorter tapes to make them more available to the teachers. Normally 15 to 20 minutes is long enough for recording an entire class session. The instant replay is a great deal of the value.

Q: What do you have in the way of equipment?

A: Five recorders, three small cameras, one view-finder camera, and three monitors.

Q: These tapes are made in the teacher's own classroom?

A: Yes, the teachers make their own tapes, calling on me only when they want some type of special effect or special animation or a specific drawing. I have found that once teachers become oriented to the video technique they develop quite well on their own.

Q: Your teachers have access to the camera and the recorder and move the equipment into the classroom themselves?

A: Definitely. There is also a mobile unit in the lower school which can be moved at will.

Q: Would you say that the teachers go for this more quickly than Therma-fax and diazo?

A: Diazo is a somewhat difficult technique, as you know, requiring refrigeration and so on. The Therma-fax and the 3M Copier are used extensively. In other words, we produce spirit masters, overhead transparencies, and other things that are of value as media to each specific teacher according to each specific need.

"Speech Through Vision Project"
Northampton (Massachusetts) Public Schools

--Ralph S. White,
Project Director

"Speech Through Vision" is a federal project (ESEA Title III) which seeks to develop video techniques and video systems for use by average classroom teachers. Involved are speech therapists and teachers of kindergarten and first grade in the Northampton public schools as well as teachers at the Clarke School for the Deaf. The project was funded last February and in early May the VTR equipment was put into the classrooms. The primary objective was to investigate the potential of low-cost videotaping for the teaching of speech to hearing and non-hearing children. The videotape recorder in a classroom is not a medium. It's not a vehicle because we are not transporting anything anywhere, if we can use that term as a definition of medium. What we would like to develop is the use of this system as a tool.

As director of the project, I have a staff that includes seven teachers, one technician, and a secretary. I underline the point of the technician because I think this project was very lucky in that the planners included someone who could maintain the equipment. In attempting to define the boundaries of the speech project, we were talking about all the aspects of speech instruction; we were talking about finding, discovering, or throwing out techniques for teaching receptive and expressive communication skills which would include all the basic fundamental skills of speech and language development. Our children came from three areas: the average hearing child in kindergarten and first grade who had normal speech patterns of speech, the hearing child who had below-average patterns of speech, and the deaf child. So we cut across three lines of education.

The tapes you will see are first-generation tapes cut from classroom activities and made by the teacher. This tape was made by a teacher in a lower school at Clarke in a tutoring situation. The child is watching herself as she talks. We haven't decided whether this is good, but it is a technique we are exploring. To see one's self on television is the most cruel, the most accurate means of self-evaluation I know of. We found from the very beginning that if we pressed the fact that television was to be used only for educational purposes we didn't have clowning around. We also found with the monitor off, the attention span wasn't there; often we got pictures of ears and sides of faces but not mouths. And the speech was not as accurate. This is the analytical approach to speech and of course the child is more deliberate and less natural. But in the early years it appears that the problems may be overshadowed by the advantages. When the child observes himself speaking on the playback, he usually spots the errors himself, especially the older child. Notice that we had a zoom lens on this camera with a closeup attachment. . . .

In each classroom we began with a camera and tripod, a big television monitor, and a videotape recorder on a stand. You run into problems when you try to adapt equipment to a classroom, so we began right away trying to change things a bit. The first step was to make things smaller. This is a middle school classroom, and we brought in a second camera to show what the teacher was doing. The purpose was simply to record the performance and play it back for evaluation: the pupils evaluating their own performances and the teacher helping them point out mistakes or errors. One of the problems we have been having is that the recorder puts out a good bit of mechanical noise all its own. In a classroom for the deaf with the compression group-type hearing aid you know what happens. The answer is to try again to modify the equipment. Our first attempt was to build a box to put the box in. But it shouldn't get hot, so you have to cut a hole in it. Then you build a sound baffle, so it gets bigger. Put in a 50-pound tape recorder and even the lid was too much for the teacher to lift. Ampex said we couldn't remote the control playing mode, but we did it anyway. It works. In the classroom the teacher has the start-and-stop in her hand and rewind and forward right here, and even with the machine sitting right beside her the noise is reduced considerably. The next approach would be to go to something that is being used at several places, the idea having started from a microteaching unit: the camera, tape recorder, and monitor all in one part. But this part is too big to move from classroom to classroom--and what about those cables hanging off the bottom? You see the problems get greater and greater. But most of us are considering mounting television sets in our classrooms today anyway, so why move a large screen monitor from classroom to classroom? Let's just move the recorder and camera. Then it will look something like this. . . .

Discussion

Q: What kind of data are you keeping? How do you know these things are working? Do you really have a control situation or just another tool in the classroom for the teacher to play around with?

A: The latter is a little closer to what we are doing right now. We would like to initiate a control group and an experimental group. I think after we have identified some specific things we would like to work on, we will try if we have time to go to a control set-up. I would say that at this time we are not a research project, but an experimental project.

Q: Is it one of your objectives to prove that the equipment can be used by the teacher?

A: Yes, and I think we already have done that. The idea is if this is really a tool, then the teacher should have access to the equipment. So hand-in-hand with development of the potential must go development of the system itself.

Q: I noticed the first example was pretty much a head shot while the second was not. Is this a specific variation and do you find it makes any difference?

A: For lipreading purposes something more that a toe-to-head shot would be better. The first example was one-to-one where the child came into the booth situation. The second example was more of what we would see in the middle or upper classes. We didn't try for a more extreme close-up because the teacher must be relatively relaxed in her position and not really watching the viewfinder. Children are of different heights, and if you try to get an extreme close-up, you often get a close-up of a chin rather than lips.

Q: Is the degree of closeness that you had in the first example less desirable than in the second?

A: We could go either way because we had the ability to zoom very close with the zoom lens. In the early stages a child can watch his mouth more easily than he can watch all of himself. Also, we found that he became adapted to the equipment more quickly if all he had to watch was his mouth. The psychological impact of videotape recording is greater than we know. Who's to say what a deaf child thinks when he sees himself on the screen like Captain Kangaroo? This can give tremendous motivation and what else it does we don't know. On the other hand, if he is the least bit insecure or shy, a slip of the tongue may make him very uncomfortable and spoil things for quite a while. Let me show you two more examples. Here the teacher is recording an activity for playback right away, as well as playback tomorrow and the next day for purposes of language. When the child is wrapped up in the activity, it is impossible to question him and give him the language. Being able to play back and discuss is a tremendous advantage. Show a flower pot, three seeds, three holes, water, a little bit of dirt and ask him what he saw. When he says four seeds, he won't believe you until you play it back. This is preparation that can be done outside the classroom. We would like to experiment with the motivational aspects, the self-evaluation aspects, and tutoring.

Media Internship at the University of Hawaii --Frances E. Brooke, Graduate Assistant

Everyone else has gotten up and said, "We planned our project." I planned my project by myself because I went to the University of Hawaii to get a master's degree in the Department of Educational Communication, and one of the requirements in the media internship is to devise some kind of project implementing and utilizing media in the schools. I felt there were unusual opportunities to use closed-circuit television in the classroom, especially in the teaching of language. We want to get a child involved in what he is personally going to be learning. When I wrote up my objectives I wanted the pupils to be able to transfer information received in their language lesson to another written or oral response. I used Ampex equipment; the

Sony and the Concord people were very cooperative also. It was just three pieces of equipment with four microphones: the camera with zoom lens, the videotape recorder, and a playback and receiver monitor. I went into the Diamond Head School in Hawaii and the teacher was marvelous.

[Color slides with commentary.] We went in and there were six-year old children who were in their second year of school in the hard-of-hearing program. We brought the television into the classroom and this was a big news item, of course. We taught from the screen because we had no VTR the first week. We went from person to person asking, "Whom do you see?" and we were able to get a lot of use out of that: "I see you," "I see me," and so on. Then we went to "Whose coat do you see?" The reason for going through this simplified system was that we wanted them to see more than themselves on the screen. In order to transfer this material from their language lessons, their being very receptive was the whole idea. It was very important to get the children to see what they were going to be doing. The next step was taking the Sony battery out and following them on the playground. . . .

Comments from Other Schools

At the American School, we have a small television studio going in now and we hope to start using it by next week. The inauguration of President Nixon with simultaneous interpreting is the only thing we have done so far with the television. In our new Media Center we have six rooms, including graphic arts room, photography room, and a television control room. We expect to be expanding from one closed-circuit channel to three in the next few months, and we are looking to many innovations--possibly even color--in the next few years. It will carry color and UHF,we hope. We have an individual mediated learning center, also a teacher preparation room, a teacher demonstration room, and so on. (Ed Cassetti and Joel Ziev, American School for the Deaf, Hartford)

At Minnesota we have a closed-circuit setup, very similar to what most of us here have. (Tim Jaech, Minnesota School for the Deaf, Fairbault)

We are involved in a three-phase operation, the first being the dissemination of special education materials to teachers and development of associate programs throughout our six-state region. The second is a research phase which we are just presently developing, and the third phase is materials production to get a highly intensified program. Up to this point we have not become involved in the third phase at all. We have a videotape machine, camera, and other nice equipment that has not yet been used extensively. I feel that after this workshop we can start moving toward this third phase. (Kerry Nelson, Kansas University Special Education Instructional Materials Center)

We do have closed-circuit installation but not quite as large as what most of you people have shown. At our school we are employing a medical approach, having found that many of the problems the children are having are medical. We believe that the children can do better in the learning situation once these medical problems have been treated. One of the ways we are using television is to tape children in their various aspects and then play it back for our medical staff. I would say we are doing about 60 percent of the things we have seen here and I am excited about the other 40 percent that we aren't doing yet. (Joe Piccolina, St. Mary's School for the Deaf, Buffalo)

Dr. Lowell has already described a large part of our video work. I might add that we have preliminary plans for a new building and we hope to have a major TV studio. (Harry Murphy, John Tracy Clinic, Los Angeles)

I feel we are making real progress in our Media Center and I have come down here to learn--to see what mistakes you people have made so that we can avoid them. (A.S.Myklebust, South Dakota School for the Deaf, Sioux Falls)

We are developing new instructional media including a closed-circuit television system. (Charles Uyeda, Regional Facilities for the Deaf, Portland)

Recently we have installed closed-circuit television to all aspects of our campus. One of the things we have noticed from use of the camera is that sometimes children want to take a look at themselves without us bugging them. We took the camera to a basketball game and after the next day's showing in the dormitory a little girl said she saw herself on television and didn't like it. I asked why and she said her slip was showing. I said, "You know what to do, don't you?" I think this is very important. Some of our classes ask for the camera and they put on a little show and then have us in to look at it and make suggestions. (Richard Davis, Missouri School for the Deaf, Fulton)

We are finding that deaf children can do all phases of work in the school media facility. We are trying to instigate a program that will enable a deaf child to find employment after he finishes school, performing basic maintenance on projectors, overheads, and so on and in general keep things going on a low level. (Paul Engle, Illinois School for the Deaf, Jacksonville)

I came here to observe and learn about television and certainly we are doing that. Television is one aspect in media that we have thought about and done some future planning toward in our new special unit. We are presently designing a new high school media building. (Bill Stark, Illinois School for the Deaf, Jacksonville)

GENERAL SESSION VI

Presiding: William D. Jackson, Director
Southern Regional Media Center for the Deaf
The University of Tennessee, Knoxville

INSTRUCTIONAL TELEVISION FOR THE DEAF

I am impressed and excited--impressed at what you are doing, excited that it is finally happening. My interest in the use of television for the deaf began back in 1959 when I directed a project at New York University, the aim of which was to explore the possibilities for utilizing television for the acoustically handicapped. My initial interest (since I am not a teacher of the deaf--my field is educational communications) was in the use of visual materials for people who are primarily visually oriented. In the project we presented four half-hour television lessons to matched groups of public school students in New York City utilizing techniques proven successful in general education. The project convinced me of two things: first, that indeed there was potential in this type of application and second, that the successful techniques of general education would be only of secondary importance for the deaf. New techniques would have to be developed.

The unique problems in the utilization of television and other media for the deaf have continued to interest and intrigue me.

Workshop summary presented by Dr. Norbert H. Nathanson, Assistant Director, Instructional Resources, State University of New York, Albany.

I stepped out of my field for two years to become, until September 1968, a staff member of Captioned Films for the Deaf for the specific purpose of developing television for the deaf. Although inadequate funds during those two years severely limited our efforts, my interest has continued and I am extremely pleased to see some action in this area and particularly pleased to have an opportunity to add my spurs to what has for the past several years looked suspiciously like a dead horse without ever having been a live one. From what I have seen here the past few days, I would say that it's well on its way toward being kicked into life.

In the past fifteen years, educational television has come to be considered by educators as a workable educational tool. During this time, numerous studies have proved that television can be successfully employed with large groups and small groups, at any grade level, and in countless subject areas. Charles A. Siepman, Professor Emeritus at New York University, has suggested an axiom for television usage for instructional purposes: "The value of television in the classroom is directly proportional to the needs and deficiencies of schools; the greater the need--the greater the benefit from television." This axiom seems to be supported by the various successes of television in alleviating some of the problems caused by rising school enrollments. Television has been instrumental in stretching new facilities budgets, in upgrading and expanding curriculum, and in effecting low-cost teacher training.

The phenomenal expansion of ETV and ITV is best illustrated by the growth of ETV broadcasting stations. In 1953, we began with one and now there are more than 180. Decreasing costs of closed-circuit equipment, together with new federal legislation providing equipment funds, have produced a boom in television installations at every level of both public and private educational institutions. The latest statistics from the "Compendium of Televised Instruction, Volume 14", published by Michigan State University Continuing Educational Services, indicated that 227 universities, 836 colleges, 42 seminaries, 49 institutes, and 46 television stations reported a total enrollment of 461,431 students in higher education in 1967. Secondary, intermediate, and elementary education listed 19,232,584 enrollments in 1,326 school systems for the same year.

The growth of educational television has also given rise to an increasing volume of professional activities centered around organizations which have television as a prime concern. The National Association of Educational Broadcasters is perhaps central among these and many states now have their own educational broadcasting or instructional television organizations. From these organizations have grown the services which the new educational television "industry" needs--program and production services, engineering consultants, legal consultants, film and videotape libraries, and experimental centers. The advent of the

Corporation for Public Broadcasting, recently established by Congress, promises a national approach to educational television programming. Such activity holds great promise for education. I mention these facts, most of which are not new to you, only to make a point: Although general education has explored, experimented, adapted, and employed television to good purposes and with good results, the same cannot be said for special education. Although general education has sought and received massive funding from government and foundations for television facilities, equipment, programming, and experimentation, special education has not. Although general education has developed large numbers of qualified people and amassed enormous amounts of experimental data regarding the relationship of television to general education, special education has not.

What you people are doing here in adapting television to serve the unique needs of the deaf is being done for the first time. Nobody else has done it. In the broad field of special education the attempts have been relatively few, widely scattered, and uncoordinated. Thus far, there have been no concerted efforts to discover the potential of television for the handicapped, or specifically for the deaf, and no organized or systematic approach to television research. Accordingly, there is no readily available body of information on the subject of television for the handicapped, relatively little source material, no widespread professional involvement in this area of activity, no compendium of historical facts (such as

McKune's) on which to base future directions and policy, and no data on costs and effectiveness. We don't have it and we need it.

To be sure, there has been some experimentation. The John Tracy Clinic has been involved in television production for some time. In Little Rock, Superintendent Roy Parks of the Arkansas School for the Deaf presented regularly scheduled television programs for the deaf via local commercial stations. At WQED in Pittsburgh, as far back as 1956, fingerspelling was used to interpret a daily newscast. Captioned Films produced 104 experimental half-hour programs for deaf adults, 30 of which are now available to ETV stations through the ETS Library at Bloomington, Indiana. We have seen other experiments during the course of this workshop, and I want to talk about that now for a few moments.

Dr. Diamond pointed out that we are living in a period of change. Schools, teachers, students, tools are changing--and we can direct that change as it affects instructional programs. We must be ready to throw out traditional patterns which are not effective and develop new ones which provide maximum efficiency of teacher time and student time and maximum learning for the individual student. This is possible by utilizing a systems approach.

Dr. Herrick cautioned us not to try to do better that which should not be done in the first place. Television, while it can help us disseminate excellence, can spread mediocrity just as fast and as far. He directed us to define our behavioral objectives and offered this test for the correct objectives: What is the learner expected to do? What conditions are attached to his doing it? To what level of accomplishment?

Mr. Palmer gave us an excellent illustration of how to develop a good media program--by systematic, sequential, incremental seduction based on clearly defined needs. I think that is what most of us are presently trying to do.

Let me switch gears now and review what's been happening in television for the deaf. There has been a lot of activity and there are many models to choose from. Facilities models include master antenna systems, inter- and intra-building wired distribution systems, single and multiple channels, one- to three-camera setups, portable cameras, complete studio facilities with lighting and switching capabilities, architectural revisions of space to accommodate television, and new buildings specifically designed for media use. Among the instructional models are teacher-controlled television, teacher-student utilization in speech training and language development, direct student use of equipment, small group use, videotape storage for the desired length of time (use and erase or store for later use), and production shortcut. Ken Hanks, with his children and the box, showed us a unique way to use television in presenting an abstract concept. Multimedia models include television and film, television and filmstrip, front and rear projection, slides and television for captioning. All are challenging areas for exploration.

Necessarily, this exploration must begin by utilizing the current state of the art as developed for general education. It is in the adaptation of proven techniques and in the eventual departure from them to the development of new and unique ones for the handicapped that the potential of television for the handicapped will be realized. Such adaptation and such development cannot "just happen." It didn't "just happen" in general educational television, and it won't "just happen" in special education. If it is to happen, organization and commitment and implementation and coordination will be required. And if your individual efforts are ever to be brought together to form a meaningful whole (as they must be if we are to make any headway), then there is only one organization in this country that can provide the essential planning, direction, and fiscal support. That organization is the Bureau of Education for the Handicapped in the United States Office of Education.

We can work very hard at developing our capabilities within our own limitations. We can develop skills and the efficiency and proficiency needed to utilize this medium for instruction of the deaf, but we are not really going to progress unless there is the commitment and organization and implementation from the top. In view of recent legislation revising the Captioned Films for the Deaf Act of 1958, such support will necessarily include all the handicapped and all areas of special education. I think this is advantageous. By spotlighting the scope and volume of need, this legislative revision can provide an opportunity to advance experimentation and research in the use of television along a broad front.

There is little doubt that the problems of communications are much more fundamental in the teaching of the deaf than in other areas. Yet, techniques developed in the area of teaching of the deaf can have application possibilities in other areas. On the other hand, we cannot categorically assume, at least as far as media is concerned, that the deaf cannot profit by the utilization of techniques and methodologies which have proven successful in other areas of special education. There are relationships to be drawn, cooperative and related research to be done, and more work than any small groups of us are capable of doing. The question is, _how_ is it to be done? I suggest that if this medium is to develop in other than a random fashion, a plan for a systematic program of experimentation and development is required. I would like to present to you a rough outline of such a plan.

First, the program must be a comprehensive one, and any comprehensive approach to the utilization of television to serve the needs of the handicapped in this nation must necessarily consider five separate categories of usage.

1. _Teacher Training_--to use television in the teacher preparation process in such a way that new teachers taught by these methods will know how to use them in their teaching.

2. Parent Training--to use television to give the parents of handicapped children a better understanding of their children.

3. Direction and Continuing Education for Professionals--to use television as the instrument for initiating change at the professional level in the field.

4. Education of the General Public--to use television to give the general public a realistic perspective of the handicapped in the society.

5. Student Instruction--to use what is pertinent from the television procedures and methods developed by general education and to develop what we need in techniques, methodologies, and materials to utilize the potential of this media to penetrate the physical, intellectual, emotional, psychological, and social walls behind which the handicapped live.

The first four categories (teacher training, parent training, continuing professional education, and public information) may be implemented within the boundaries of proven effective use of television by practicing known techniques. There are numerous models which can be imitated, as well as new applications which can be explored. The final category (student instruction) is almost wholly experimental at this time. First, we should try to apply those television techniques successfully employed in general education, and second, we must develop new procedures uniquely suited to the instruction of the handicapped. There is a sixth category: research. It is reasonably and necessarily a part of any of the preceding five. Within each of these categories, both open- and closed-circuit distribution should be considered as well as teacher and student controlled television. Any program must begin where it is and with what it has. We don't know exactly where we are or what we have, so we must find out with what I'll call Project I of my plan.

Project I is a survey to discover the frequency, nature, and uses of television applications in the respective areas of education of the handicapped to date. I mentioned before that we lack data needed for administrative as well as experimental purposes. It isn't reasonable to assume that only those here today are interested, active, or knowledgeable in utilizing television for the handicapped. I believe it would be interesting and helpful to know, for instance, how many schools for the handicapped are currently using open-circuit television, either educational or commercial, in what contexts, by what methods, and with what results. We don't know--and we should. Such a survey will be helpful in determining priority for further development and experimentation, in formulating strategy, in utilizing already developed skills, and in avoiding duplication of effort. This proposed survey can be accomplished in a variety of ways, one of which is to contract with a research-survey agency which is familiar with educational television research. Such an agency is the Michigan State University, Continuing Education Services, University of the Air, headed by Lawrence E. McKune. For the past thirteen years, Dr. McKune has published a yearly compendium on instructional television. The current publication drew upon more than 3,000 educational institutions. With little extra effort, his information collection system could be revised to include schools of the handicapped. There are other agencies capable of this task, and they should be reviewed.

Project II will isolate, identify, and define where possible those problems considered to represent the most formidable obstacles in the field. These problems should be identified in two general categories: those common to the entire field and those unique to each special area of the handicapped. Within the two categories, priorities should then be assigned. Criteria for this processing may be set by conventional methods utilizing committees comprising experts in the various fields. Subsequent to the establishment of priorities, the list of identified problems should be reviewed with an eye toward television's possible contribution to their solution. The nature of many of the identified problems will preclude any further consideration of television. Those remaining, however, should again be subdivided into two groups. Group I would include those problems most likely to benefit from the application of television, such as those in the general categories of teacher training, parent training, direction of professionals, and public information. Group II would include those problems with some possibility for television application, even though at present we possess no proven methods or techniques. Group II comprises the hard area of experimentation and research.

Project II is obviously the backbone of the entire plan by nature of the policy decisions, priority determinations, and directions established within it. In its later phases, it is also the coordinating center of the total program. Since priorities and problems change with time, the initial functions of identification and assignment of priority to problems will continue. The Bureau of Education for the Handicapped performs these functions now with respect to the entire field. It already has much of the data just discussed. Project II merely focuses attention on the potentials of television application to these problems and provides focus, broad perspective, and direction for exploring television for the use of the handicapped. Once the inter- and intra-specialty problems relating to television have been identified, it will be necessary to initiate projects in those areas which are already well developed in general education: personnel training, program experimentation and development, equipment evaluation and testing, coordination of experimental data, and so on.

I will outline briefly six more projects which could comprise an initial program of reasonable scope and which will provide some basic data on which to build.

Project III: Educational Television Workshops for Special Education Teachers. One of the recurrent problems that has faced the development of television in general education through the years has been the inability of the teacher training institutions to catch up with the new media as they relate to the training of teachers. Too often new teachers interested in using television must take graduate courses to learn the newest techniques which should have been included in their basic undergraduate curriculum. Where educational television workshops have been added to the curriculum, there is rarely time to concentrate on the possibilities for special education. Since many of the problems in this area are unique, perhaps the workshop point of view should concentrate on the relationship between the uniqueness of the problems and the uniqueness of the medium.

Project IV: A Broad Experiment to Explore Various Potential Applications of the Use of Teacher-Controlled Television Units for the Handicapped. This project will seek both the commonalities and the exceptions of television applications in several fields. The experimental method is to (l) establish experimental units in selected situations which represent the various respective areas of the handicapped, (2) establish common experimental guidelines for all units, (3) provide identical technical equipment for each unit, (4) staff each unit identically, (5) conduct a series of identical experiments in each area, and (6) conduct a series of unique experiments in each unit. The findings of the varied experiments will be the first step toward a compendium of television utilization for the handicapped--a beginning manual for the future, one which will hopefully give us some initial insights into utilization of television in the common, as well as the unique, areas. At the same time, it should be possible to make some operational evaluations of the equipment used in the experiments.

Project V: Open-Circuit Television for Teacher Training. Effective use of open-circuit television hinges upon successful utilization of the basic characteristics of any mass communications media, that is, high initial development costs, high speed of reproduction, high speed of distribution, high rate of consumability, and low unit cost. Cost effectiveness in open-circuit use of television invariably is related to volume. Therefore, in order to obtain volume and thus justify the medium, we must identify key areas of need in teacher training which cut across the various areas of exceptionality. We must then identify and select those persons best able to prepare teacher training materials for these areas. Since we are already committed in this kind of usage to a high development cost, we can afford to use the best possible teachers. We must then produce, preferably at a central location, a series of teacher training television programs and study materials which are designed to satisfy the stated needs. Finally, we must distribute these programs by utilizing existing facilities, educational television stations, closed-circuit systems in teacher training institutions, state education departments, and local commercial stations who will make time available for public service. Videotapes of the programs will have to be made available in multiple copies and possibly in several sizes through some kind of scheduling and distribution system. It may be possible to use the services of the National Center for School and College Television, the Educational Television Stations Library, or the Great Plains Instructional Television Library. Such a system, once in operation, can be used for continuing education among professionals or for the nationwide introduction of new techniques and new curriculum.

Project VI: The Use of Local Television Stations to Provide Exposure to the General Public of Local Experts in the Area of the Handicapped for the Purpose of Presenting National Policies, Activities, and Goals. For a number of years, the American Manufacturing Association has had considerable success in sending around the country packaged programs which communicate its policies and point of view. The individual program, which is produced at a central location, includes a printed script, slides, art work, promotional copy, film clips, and titles necessary for local production with minimum cost of local time and effort. A local expert appears live, either to present a testimonial or to participate in a dialog or panel discussion. Duplication of the basic package allows for broad coverage with centrally produced materials which feature local emphasis. In this way, the general public can be kept up-to-date on national topics related to the handicapped and, at the same time, get to know their local experts. It affords the local experts functional access to the local television community.

Project VII: The Development of Parent Education Programs to Alert Parents to Early Identification of Handicaps and to Direct Them to Proper Agencies for Testing and Treatment. Again, there are many approaches to this problem. Here is just one: Produce a series of programs, one for each area of exceptionality, which graphically portray the respective symptoms and then distribute the programs widely to commercial and educational television stations across the nation. With proper coordination of program scheduling, perhaps through the newly organized Corporation for Public Broadcasting, it may be possible to effect the impact of network programming at the same time on the same day on every ETV station in the country. It might even be possible to program the entire series in a single week to be designated by the President as "Identify the Handicapped Week".

If I appear to be concentrating on open-circuit broadcast activities, it is because I am convinced that if we are ever going to get the fiscal support for experimentation we must do in television and other media. It can only happen as a result of the general public's support. More specifically, it will happen when the legislature is aware and interested and concerned about what we are interested and concerned about. It's not a question of whether or not we can afford to get into these kinds of television usage--it's a question of whether we can afford not to do it. Open-circuit use of television can be utilized as well for public information education. This might be a series of programs for general adult educational use, which will treat the problem areas directly related to parent and public understanding of the handicapped. Such programs could be produced by television production agencies, either commercial or educational, selected on the basis of ability to handle the task and also on their proximity to the institution and experts who will be a part of the program. Such programs represent conventional use of open-circuit television and could be distributed to commercial and educational television stations via the usual libraries which I have mentioned. In addition, they can be transferred to film and made available for use by parent-teacher groups or educational institutions, or television network stations.

Project VIII: Establishment of a Government Agency to Operate a Sophisticated Television and Film Production Facility. There is ample precedent--NASA, USIA, Department of Agriculture, and the United States Army have for years operated such facilities. Such agencies maintain their respective facilities essentially on the basis of having unique needs which require specialized staff, facilities, and immediate availability. The development of materials for the handicapped manifests similar needs, but thus far services and facilities have been purchased on a contract basis. In some instances, the logistical and fiscal problems arising out of the nature of the medium are not conducive to expedient completion of projects thus contracted. The utilization of different persons on a one-shot basis to produce individual items requires the education of that person or agency to our problems and our needs. This is time-consuming and, I tell you from personal experience, quite unsatisfactory. A staff of skilled persons familiar with our aims and with our needs and with our problems will become increasingly experienced through successive in-house productions and provide much needed impetus to current efforts. Special requirements for equipment and specially constructed equipment could result from technical staff efforts in such an installation. Specially developed techniques will become, to the in-house crew, standard procedures. Accordingly, as

Project VIII, I propose the establishment of a self-contained sophisticated film and television production agency to provide the facilities, skills, personnel, and services currently needed to produce meaningful new materials for all areas of the handicapped. Such a production center would, in a short time, become the training and the proving ground for the most advanced techniques.

Now, then, I don't think I have told you anything that's new. I am aware that there are a number of projects in various stages of planning which are either similar or identical to some of those I have suggested. The number, the nature, the scope of the individual projects are much less important than that they relate to some central theme, some master plan. And, if there is anything I want to get across to you, it is just that. We need top-level endorsement and top-level direction. We need a broad plan that will allow us to move forward on a broad front. The problems and needs are enormous.

I am concerned, however, about a few things in the development of such a plan and I suggest that you give them some thought. During this workshop I have heard a lot of apologies, yet seen nothing for which an apology was in order. I don't think there is any reason to apologize for any of the activities and developments which have been described here or have taken place in your respective operations. Emphasis on "how cheaply we can do things" also bothers me. As educators we are all part of that experience where you say, "If you want this done, I need $100." He says, "I'll give you $50." You say, "O.K., I'll do it for $50." I suggest that the reply should be, "I'll do half of it for $50!" I think this is important and you must establish it now.

I am also disturbed about the load being put on teachers with the development and utilization of new media. Now I realize what the practical facts of life are, but we are asking them to be curriculum developers, technicians, artists, producers, and directors at the same time there is a lot of talk around the country about how the teacher should have the same kind of support in American education that the doctor has in American medicine. And I would suggest to you, since you are in a policy-making stage as well as a developmental stage, that you give some thought to the precedent you are establishing when you involve teachers in media and where this will lead. Certainly there are both good and bad aspects. It should be clear in your mind what you are doing.

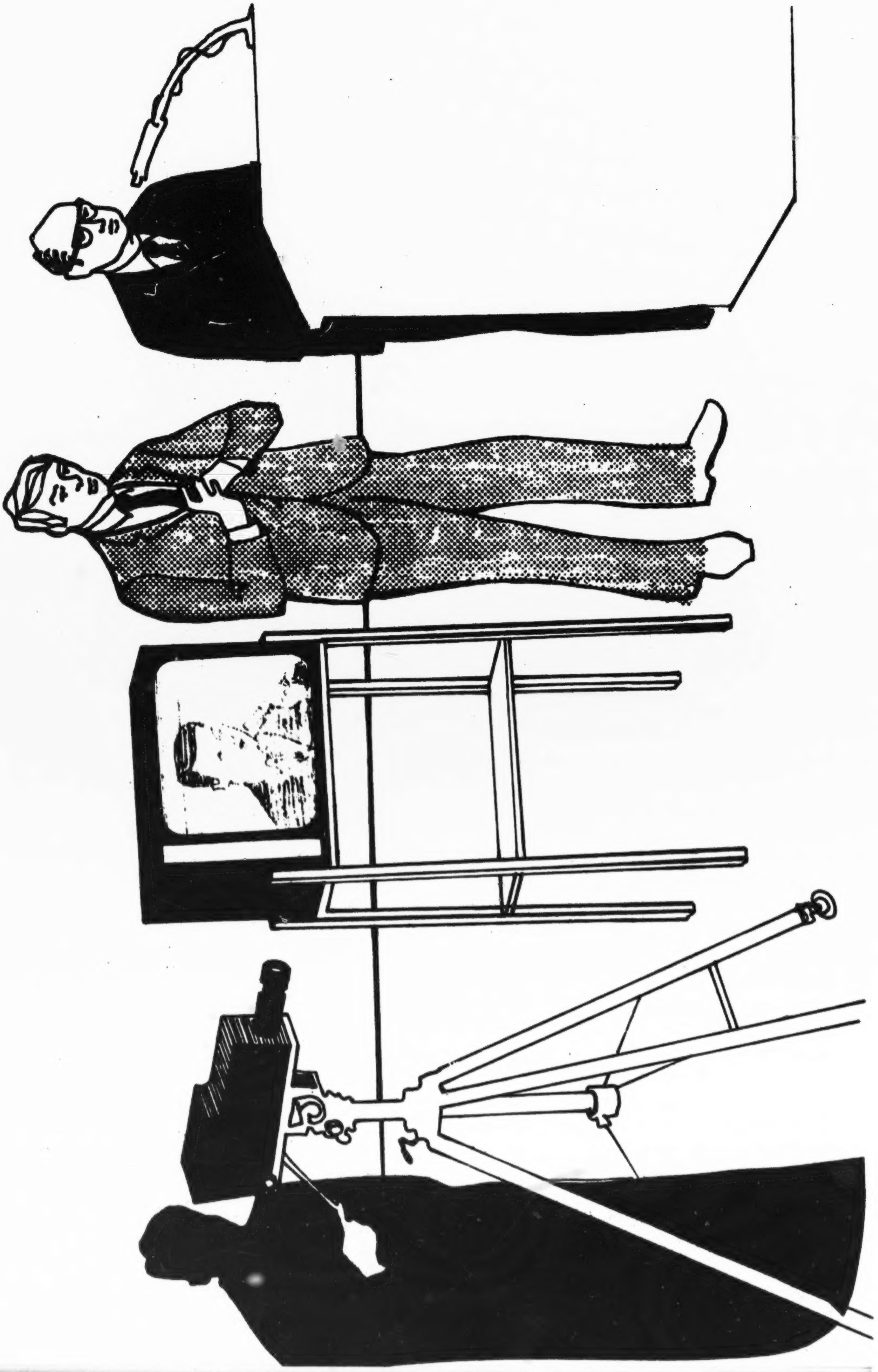
Another thing I am disturbed about is the readiness to accept poor materials. If they don't happen to be too good, we can accept that in initial materials. But don't let it be the basis on which you build. Recognize it for what it is. When you see a poor quality television picture, ask yourself whether or not you would accept and overdeveloped or underdeveloped film or distorted color on a color slide. If you wouldn't, then ask yourself why you are accepting it in television. Getting back to objectives, I think it important that you determine the quality necessary for a given objective and if you meet that quality, even if it is not the best but does the job and you know that's what you are after, fine. But don't run into the dead end of purchasing equipment and being limited by the range of equipment and then deciding that this is all the quality you need. That's rationalization. Don't fall into that trap.

As I sat here for the past few days, the biggest problems I saw were those of information--its collection, its categorization, its circulation. A second problem was the validation of experimentation--how good is it, what good will it do? Third, the one I have spent so much time on, is the systematic exploration of the field in its potential.

The technology is here. We need a systematic approach to the utilization of that technology for solving the unique problems and satisfying the unique needs of the handicapped. I will not presume to discuss the kind of staffing such a program would require should the Bureau of Education for the Handicapped undertake such a program. I would like to say, however, that the initiation and coordination of such a program requires contact with high level and local officials. It requires direct involvement and cooperation of specialists in the Bureau and their counterparts in the field at all levels. It requires high level liaison activities with organizations such as the Corporation for Public Broadcasting, the National Association of Educational Broadcasters, equipment managers and the community television antenna operators, television program libraries, commercial stations and commercial networks, educational television officials, state education television agencies, and others on matters of project planning, evaluation, program production, and distribution. It is a big job and it will require support and status in the Bureau. As I mentioned, thus far there has been no concerted effort to discover the potential of television for the handicapped and no organized or systematic approach to television research. Accordingly, there is no readily available body of information on the subject of television for the handicapped, relatively little source material, no widespread professional organizational involvement, no compendium of historical facts, and no data on costs and effectiveness. We don't have it and we need it. Since we are going to do it anyway, why not try to do it thoroughly and well?

Discussion

[Editor's note: An "innovative technique" for utilizing television in large-group sessions is illustrated in the attached sketch. During the open discussion which concluded the workshop, a camera with zoom lens followed the proceedings, transferring each speaker's image to the on-stage monitor beside which the interpreter stood. This experiment was immensely popular with the audience. It was originally planned, of course, to permit full involvement of the deaf participants, but hearing persons, too, enjoyed relief from the usual twisting and turning to see the speaker in an open-floor discussion of this type.]



Graunke: The topic of this workshop was "Current Developments." Now that you have seen the new developments, it is time to make plans for the future. And one of the immediate projects is to plan for the Symposium at Lincoln in March 1970. Also, we want to take up the challenge that Norbert has given us. We have no time to waste in marshalling our efforts and our forces toward some of these long-range goals. The people who are going to plan this symposium for next year need your ideas.

LaGow: I would like to suggest some kind of committee, or maybe more than one committee, to establish lines of communication between each of these schools or centers where production is going on. I would like to see us get out of the demonstration business and into the program development business. In the past few years we have at least developed a reservoir of experience, so that the Regional Media Centers are able to provide immediate help for people who want to get something done--not always in terms of money, but resources are available from each of the RMC's. Some people are still in the equipment stages and need advice. Do we have any standards set up so that we know what specific kinds of equipment are needed in the schools for the deaf? I would like to see us begin working on the development of a whole range of programs for schools. I am beginning to be interested in what might be done in this respect, especially when Mr. Nathanson talks about a national center which could be set up for film and television production. This kind of center must depend very much on the field, who hopefully would request that committees be set up to decide what the curriculum would be and what things would go into these programs.

Murphy: We have often heard it said that if today's technology in films and television had been available several thousand years ago we could have had captured for us through this technology such people as Socrates, Aristotle, and Jefferson. I am concerned to see people with great knowledge and experience in special education retiring from the field without sharing more universally their insights and putting down for the rest of us what they have gathered over the years. I think also there are some great teachers in this country who should be seen teaching class through television or films. Outstanding portions of the conventions might be put on tapes and used for inservice purposes in schools during the year. In that connection, I want to call to your attention that IDEA, in Melbourne, Florida, will make available free VTR reports of seminars on innovations in education. These are often ideal for inservice workshops.

Graunke: Perhaps when people leave the Symposium next year, they could be given a packet of materials on where to find different kinds of information. I think this is a very serious need.

Nathanson: With a symposium in the planning stage, I think we are going to have to be concerned with information in three stages: (1) information that we bring to the Symposium (all kinds of mediated information, specifically designed and produced for the Symposium), (2) information that will be disclosed at the Symposium by way of discussions and comments, and (3) the total information which will result from the Symposium. One of the first things you are going to have to do, however, is identify the major thrust of the Symposium. I'm not sure what that is and maybe the only way you come to it is by discussing the individual areas first.

Scouten: There are two areas that I feel need a little more looking into. One is the standardization of equipment. Now, I realize that we cannot recommend one particular system, but I think we should work towards developing specifications which would standardize equipment throughout the country. The second area is that of housing equipment. A great deal would be added to the effectiveness in using television if we could house it a little better and be able to switch and move it around more easily.

Graunke: Two or three different ideas are being generated here. One is that we need to have a means for identifying sources for programming and other information about effective utilization of television in deaf education. We also need to identify problems of instrumentation or equipment.

LaGow: I see the problems on several different levels. First of all, we have the problem of administrators who want to know what kinds of equipment to buy. Second, there are the schools which have put in a lot of money to set up very sophisticated television outfits and are now ready to go into production. Then we have another problem of teachers, who would like to be able to use videotape recorder equipment and want to know how it can be applied to classroom situations. So we have several different things going on. I would like to see us begin to set up some central location or at least a group of people who feel themselves responsible for getting together what information they can over the next year in order to be able to set up a symposium that would address itself to more than one problem. We shouldn't just address ourselves to equipment.

Jackson: In regard to the 1970 Lincoln Symposium, the theme is "Individualizing Instruction" and the speakers will not necessarily be focusing on television. I would like to take all the information we have, along with the suggestions made here and other suggestions you will send us, and compile a reference manual or field guide that could be presented at Lincoln and distributed widely. We are willing to commit money and staff time and whatever else is necessary to do this kind of thing, but we can't do it alone. When you get back, if each of you will counsel with your own staffs and send back your comments and suggestions for such a manual, people who might be asked to write position papers, and so on, we will be happy to do the editing and compiling. The potential before us is great. Many innovative programs are being started, and we need an exchange of ideas.

Q: Has anything been done about establishing an organization of media specialists working in schools for the deaf?

Jackson: This inquiry has come from other sources in the past year and a special session on "Educational Media" has been scheduled at the American Instructors of the Deaf convention at Berkeley in June. It has been suggested that out of this may emerge some kind of organization involving media specialists and also librarians. I believe it would be a mistake to omit the librarians or others who are on the fringes--and I use this term with caution,, because the librarian may not be on the fringe but traditionally he has been book-oriented. Some people, for example, are very specialized in the field of electronics, while others are very naive and have a great deal to learn. I think we need to look at a multi-level symposium with offerings for those who are coming for the first time as well as those whose feet are completely wet clear up to their shoulders and are interested in more advanced things.

Q: I think a very important point has been highlighted. Who are the people who go to the Lincoln Symposium? What is our audience? To whom are we going to aim this program? Has the field been fairly well covered now in the initial stages?

LaGow: Mostly, administrators come to the Lincoln Symposium. It was set up in the beginning as a way for administrators to be informed about the newer media and ways of doing things. Actually, the audience ranges greatly--some teachers are there, some people from various levels of administration in schools for the deaf, a lot of people from residential schools, some from day-school programs all over the country, but primarily administrators.

Graunke: I don't think we can expect to have many classroom teachers. They are the indispensable people on our staff during the school year. The audience to which we are going to aim our efforts next year will be primarily administrators, supervisors and principals, and media specialists. So I think we can assume a certain level of prior knowledge of what's going on, and these people are going to want to be elevated in the three days they spend there to become more knowledgeable. The administrators know how to set their goals because we have to think five or ten years ahead on the directions in which we are going. The supervisors need to know how to plow these innovations back into the classroom and the media people need to know what their role is in this process with the administrator providing the wherewithal and the classroom teacher implementing the media into the instructional program.

Jackson: In regard to the Symposium, something should be said about travel expenses. There seems to be a trend in Washington at the present time that if you have federal money you should be able to travel on your own funds. This year the invitations went out basically to people in leadership positions but at their own expense. This may cut out a lot of people. I think that each of you should go back and give serious thought to this. In other words, who is the person who should attend the Symposium? By early fall we need to know who will attend. As for the program itself, I think we should consider fewer general sessions and more subgroups in specific areas for persons with special interests.

Scouten: Reference was made earlier to "plowing the material back into the classroom." Since English acquisition is the essence of education, teachers and supervisors would be interested in the area of language development. We know that experience without language accompanying it is of little value to the prelingually deaf child. By the same token, the vicarious experience presented through the television screen is not too educationally valuable unless it is simultaneously supplemented with palpable concrete English which the prelingually deaf child can see. If some attention could be given to using English in reference to the experience received through television and other media, these media would certainly be serving the end purpose of education of the deaf.

Jackson: It is crucial to remember that we are not trying simply to display to deaf children a lot of visual information, but to stimulate and provide through visual mode a wide range of meaningful experiences which must be interpreted in a literal sense as well as allowing them to react to what they see in an expressive way using language and developing language skills and abilities. This is the essence of education. So I would have to go along very strongly with Ed on this recommendation. We must keep it in mind that personal involvement of the individual himself through full understanding of what is happening and being able to express his reactions is the essence of education.

Nathanson: Since it is obvious in terms of their duties at home and the amount of money available that not all the people who could benefit from the Symposium can be there, I suggest that the television medium could provide the solution to that problem. And I would suggest that perhaps it is time for somebody, maybe this group, to seek a special grant to cover the television recording of the Symposium and also to cover the costs of distribution through the year to all of the schools and the people who might possibly profit from it. It seems to me that this is an obvious way of extending dollars and disseminating information by use of the very medium we are discussing here.

LaGow: The idea of videotaping the entire Symposium has been considered and discarded as impractical.

Graunke: I think that kind of program could be presented to the agencies who might be interested in funding future efforts in this direction. An effective presentation on videotape to show these people precisely what you are talking about has a tremendous impact. Are we going to set up a steering committee for the Symposium, Bill?

Jackson: I am reluctant to move ahead on this immediately because several of the original participants in this workshop have already left. As an alternative, I suggest that a memorandum go out from my office seeking from each participant--no later than April 1--recommendations about major areas of concern, speakers, participants, and so on. [Editor's note: This memorandum mailed March 14, 1969.]

Palmer: I have been jotting down some names of people in industry who might be able to assist in this type of project. If I were asked to select a panel of industrial experts in the field of visualization to consider the question, "How can industry help the deaf?", I would choose such men as Art Coellen (editor of Business Screen, which reaches all the audio-visual people in industry), Carl Lenz (the president of Modern Talking Picture Service, representing the field of distribution of visual information), Bill Buch (past president of the Industrial Audio-Visual Association and the audio-visual man for Lederle Laboratories), and Tom Hatcher (the Director of Experimentation and Innovations for Equitable Life Insurance Company).

Davis: I think in this connection, too, we ought to remember that any of these systems is only going to be as good as what we put into it. We ought to take a look at the people who are very concerned with curriculum without any connection at all with media and find out what they are doing and what they want. Let's face it, it's really the job of the media specialists not to set the curriculum but to take the recommendations of the curriculum specialists and then do whatever is possible with media to support them in achieving their ends. I think we must take a real look at this from a whole approach.

APPENDIX

ROSTER

WORKSHOP ON VIDEO TECHNOLOGY AND PROGRAMS FOR THE DEAF: "CURRENT DEVELOPMENT AND PLANS FOR THE FUTURE"

February 24 - 27, 1969

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Federal Communications Commission, New Post Office Building, Washington, D.C. 20554

Fund for the Advancement of Education--The Ford Foundation, 477 Madison Avenue, New York, New York 10022

Joint Council on Educational Television (JCET), 1785 Massachusetts Avenue, Washington, D.C. 20036

National Association of Educational Broadcasters (NAEB), 1346 Connecticut Avenue, Washington, D.C. 20036

National Center for School and College Television, Box A, Bloomington, Indiana 47401

National Education Association (NEA), Department of Audio-Visual Instruction (DAVI), 1201 Sixteenth Street, Washington, D.C. 20036

National Educational Television and Radio Center, 10 Columbus Circle, New York, New York 10019

Visual Dynamics Educational Film Library, 3215 Cahuenga Boulevard, Los Angeles, California 90028

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